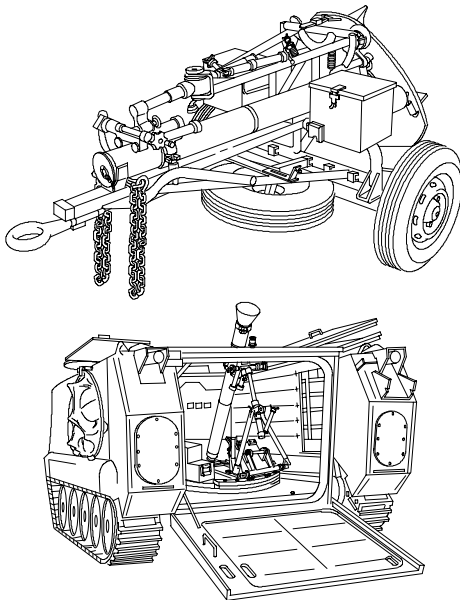


TECHNICAL MANUAL

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) (INCLUDING DEPOT REPAIR PARTS)

FOR

MORTAR, 120MM: TOWED M120 (NSN 1015-01-226-1672) (EIC:4SL) MORTAR, 120MM: CARRIER-MOUNTED M121 (NSN 1015-01-292-3801) (EIC:4SE) TRAILER, MORTAR, 120MM: M1100 (NSN 2330-01-227-1736) (EIC:4SM)



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August 1996

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WARNING

Before starting an inspection or performing maintenance procedures, inspect the mortar barrel assembly to make sure it is empty. Keep live ammunition out of the area during maintenance operations.

Dented cannon tubes must be replaced as they are unsafe for firing.

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

When power grinding or sanding, always wear safety glasses and eye protection.

The buffer operates under spring tension. Use care when removing or installing helical spring.

Dry cleaning solvents (SD) and paint thinners are highly flammable. Do not clean parts near an open flame or in a smoking area. Dry cleaning solvents and paint thinners evaporate quickly and have a drying effect on the skin. Do not use these solvents without protective gloves.

Various solvents used in this manual produce toxic vapors. Do not use in confined areas and always ensure adequate ventilation is available. Avoid long periods of breathing toxic vapors and contact with the skin.

When handling corrosive chemicals or strong cleaning solvents, always wear safety glasses and/or chemical splash goggles and know where nearest eye wash station is located.

For first aid data, see FM 4-25.11.

Chemical Agent Resistant Coating (CARC) Paint

CARC paint contains isocyanate, a constituent that can cause respiratory effects during and after the application of the material. During the application of CARC paint, coughing, shortness of breath, pain on respiration, increased sputum, and chest tightness may occur. CARC paint also produces itching and reddening of the skin, a burning sensation of the throat and nose, and watering of the eyes.

An allergic reaction may occur after initial exposure (ranging from a few days to a few months later), producing asthmatic symptoms including coughing, wheezing, tightness in the chest, or shortness of breath.

The following precautions must be observed to ensure the safety of personnel when CARC paint is applied.

- For brush/roller painting in confined spaces, an airline respirator is required, unless an air sampling shows exposure to be below standards. If the air sampling is below standards, either chemical cartridge or airline respirators are required.

WARNING (Cont)

- **Spot painters applying CARC paint by brush or roller must wear clothing and gloves affording full coverage.**
- **Do not use water, alcohol or amine based solvents to thin or remove CARC paints. Use of these solvents with CARC paints can produce chemical reactions resulting in nausea, disease, burns, or severe illness to personnel.**
- **Do not use paint solvents to remove paint/coating from your skin.**
- **Mix paint/coating in a well-ventilated mixing room or spraying area away from open flames. Personnel mixing paint/coating should wear eye protection.**
- **Use paint/coating with adequate ventilation.**
- **Personnel grinding or sanding on painted equipment should use high efficiency air purifying respirators.**
- **Do not weld or cut CARC-coated metal because substances causing skin or respiratory irritation may be released. Before applying any heat, sand or grind the paint down to bare metal on an area four inches to either side of where the heat is to be applied. Remove paint from the other side of the metal, if it is painted.**

For further information, see TM 43-0139.

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NO. 3

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DEPARTMENT OF THE ARMY
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**TECHNICAL MANUAL
UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
(INCLUDING DEPOT REPAIR PARTS)
FOR
MORTAR, 120MM: TOWED M120
(NSN 1015-01-226-1672) (EIC:4SL)
MORTAR, 120MM: CARRIER-MOUNTED M121
(NSN 1015-01-292-3801) (EIC:4SE)
TRAILER, MORTAR, 120MM: M1100
(NSN 2330-01-227-1736) (EIC:4SM)**

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SANDRA R. RILEY

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**TECHNICAL MANUAL
UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
(INCLUDING DEPOT REPAIR PARTS)
FOR
MORTAR, 120MM: TOWED M120
(NSN 1015-01-226-1672) (EIC:4SL)
MORTAR, 120MM: CARRIER-MOUNTED M121
(NSN 1015-01-292-3801) (EIC:4SE)
TRAILER, MORTAR, 120MM: M1100
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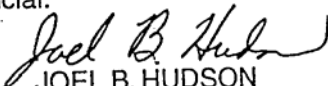
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UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
(INCLUDING DEPOT REPAIR PARTS)
FOR
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MORTAR, 120MM: CARRIER-MOUNTED M121
(NSN 1015-01-292-3801) (EIC:4SE)
TRAILER, MORTAR, 120MM: M1100
(NSN 2330-01-227-1736) (EIC:4SM)**

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Technical Manual

No. 9-1015-250-23&P*

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DEPARTMENT OF THE ARMY
Washington, DC, 19 August 1996

UNIT AND DIRECT SUPPORT MAINTENANCE MANUAL

for

MORTAR, 120MM: TOWED M120
(NSN 1015-01-226-1672) (EIC: 4SL)
MORTAR, 120MM: CARRIER-MOUNTED M121
(NSN 1015-01-292-3801) (EIC:4SE)
TRAILER, MORTAR, 120MM: M1100
(NSN 2330-01-227-1736) (EIC:4SM)

Current as of 30 September 2004 for Appendix C

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HOW TO USE THIS MANUAL

The safest, easiest, and best way to do maintenance on the 120mm mortar is to use this manual. Learning to use this TM is as easy as reading through the next few pages. Knowing what is in this manual and how to use it will save you time and work and will help you to avoid exposing yourself to unnecessary hazards while you do your job.

So where do you start?

Start right here if this is the first time you are using this TM. Completely read this section first. There is a lot of information you will need to know.

ORGANIZATION.

This manual is divided into two types of maintenance activities. These are: Troubleshooting or location of faults by symptoms you can detect and Maintenance Procedures that are used to correct faults and replace failed parts. You will be using the procedures in this manual to do one of these types of maintenance. Within this manual you will find the material organized in functional group code order like the Maintenance Allocation Chart in Appendix B. This allows the TM to be aligned with its applicable Repair Parts and Special Tools List (RPSTL). For information on how to use the RPSTL, refer to the introduction in Appendix C.

General Maintenance Instructions (GMI) are provided to assist you with common knowledge information. They are provided as general instructions so the specific steps won't have to be included in every procedure. Examples of general maintenance instructions found in this manual include information on drilling, tapping, or scribing a part(s) for realignment during reassembly. You should familiarize yourself with all the information in the GMI.

HOW TO FIND PROCEDURES.

If you're using the manual to perform Troubleshooting, go to the general paragraph for either unit or direct support maintenance, as applicable. Read the instructions on how to use Troubleshooting and proceed according to the instructions found there. If you are using the manual to repair or replace a part you already know is bad, start by locating the part to be replaced in the Alphabetical Index located at the back of this manual.

How do you find the correct procedure?

Look in the Alphabetical Index for a key noun from the mortar weapon system or part nomenclature. For example if you were looking for the repair procedure for the taillight assembly, you would look for a "key" word in that assembly description. You might look under stoplight or taillight and find the complete description listed as stoplight-taillight assembly; then locate the subheading as disassembly or reassembly. Once you have located the correct procedure, read it to determine if you have everything you need to perform the task. Make sure all Equipment Conditions have been met before beginning. Familiarize yourself with the potential hazards, if any, described by any WARNING or CAUTION. You must familiarize yourself with the entire maintenance procedure before beginning the maintenance task.

HOW TO USE A MAINTENANCE PROCEDURE.

The first page of a maintenance procedure lists everything you will need to perform the procedure. The following paragraphs describe all the blocks of information you will encounter.

a. TOOLS/SPECIAL TOOLS. Individual tools from your mechanic's tool kit will not be listed under this heading. If any tools from this kit are required, the tool kit itself will be listed as the first item. Special tools, fabricated tools, and tools from any other source will be listed with a reference to a specific item and appendix number. The referenced appendix will provide you with the necessary information to find the tool.

b. MATERIALS/PARTS. If any expendable or consumable supplies are needed to perform the task, they will be listed under this heading along with the quantity in parentheses and with a reference to the appropriate item and appendix in the back of this TM. The referenced appendix will give you detailed information to requisition the supply if necessary. Replacement parts are not normally listed under this heading. The inspection steps in the removal or disassembly procedure will tell you which parts to replace. Mandatory repair parts (parts that are destroyed in disassembly or not normally re-used, such as gaskets and lockwashers) are listed under this heading by their nomenclature only.

c. PERSONNEL REQUIRED. The number of personnel necessary to perform the task will be listed here. You will find this heading only in procedures that require more than one person.

d. EQUIPMENT CONDITION. This heading will list the special conditions which must be met prior to performing your task. In many cases, the condition has already been identified in another procedure. In these cases, the Equipment Condition will refer to that maintenance procedure for details in performing the preliminary task. For example, in paragraph 3-13, the Equipment Condition states that the buffer housing assembly must be removed from the buffer mechanism before repair of the clamp handle assembly can begin. This task is covered in paragraph 3-12 and is so referenced. You would refer to paragraph 3-12 and perform that task before beginning the clamp handle assembly repair.

e. REFERENCES. These are other technical publications you will need to do the task which are found in Appendix A. This heading will only appear when other references are needed.

How is the maintenance task organized?

The maintenance procedure is arranged to perform the procedure. Besides the information already discussed, categories such as inspection, service, disassembly, lubrication, repair, and reassembly will be listed. Specific instructions will be given to perform that part of the maintenance procedure. Be sure to follow all the steps given and do not skip any categories unless you are absolutely sure that they are not required for the completion of your maintenance task. In any case, always check with your supervisor and get his approval before going to a new task.

HOW TO USE THIS MANUAL (Cont)

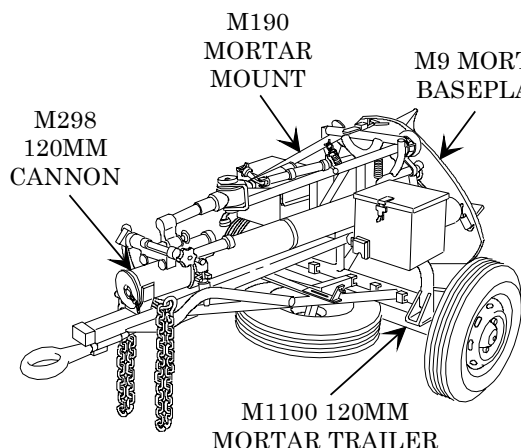
Am I ready to use this TM?

If you have taken the time necessary to read this section, and are sure of the location and arrangement of the different sections of this TM, you are ready to begin. Remember, this TM has been arranged with you, the user, in mind. Your safety and ability to perform the necessary tasks in the most efficient manner possible are most important. Finally, always check with your supervisor for approval that you are fully prepared to use this manual. If you follow all the above guidelines and suggestions given in this section, you will have no trouble when using this manual and will provide the maintenance necessary to keep this weapon system operating in the manner for which it was designed.

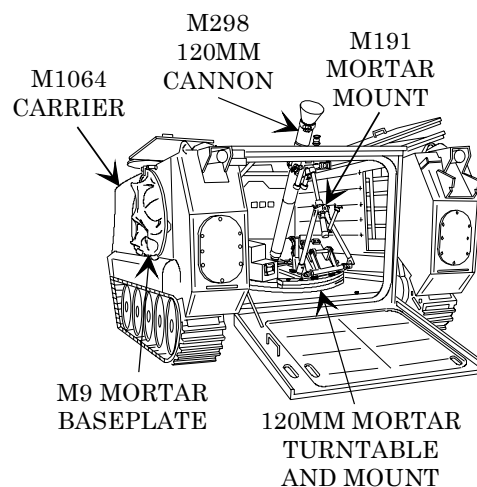
CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION



M120



M121

1-1. SCOPE.

- a. **Type of Manual.** Unit and Direct Support Maintenance.
- b. **Model Number and Equipment Name.** 120mm mortar, M120/M121.
- c. **Purpose of Equipment.** Provides a high-angle fire support system for use against a variety of ground targets.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Procedures and materials used for the destruction of the mortar in order to prevent enemy use will be found in TM 750-244-7.

1-4. PREPARATION FOR STORAGE OR SHIPMENT. Requirements for administrative storage are listed on page 2-49.

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS.

NOMENCLATURE CROSS-REFERENCE LIST

<u>Common Name</u>	<u>Official Nomenclature</u>
Machine bushing	Machine threaded bushing
Manual control handle tube	Handle

1-6. EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your 120mm mortar needs improvement, let us know. Send us a SF 368 (Product Quality Deficiency Report). You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Mail it to us at: ATTN: AMSTA-AR-QAW-C, TACOM-ARDEC, 1 Rock Island Arsenal, Rock Island, IL 61299-7300 (FAX: Commercial (309) 782-6653, DSN 793-6653) (E-mail: qawqdrs@ria.army.mil). A reply will be furnished to you.

1-7. CORROSION PREVENTION AND CONTROL (CPC).

a. Corrosion Prevention and Control (CPC) of Army Materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber, plastic, and felt. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion concern.

c. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words such as "corrosion," "rust," "deterioration," or "cracking" will assure that the information is identified as a CPC problem.

d. The form should be submitted to:

ATTN: AMSTA-AR-QAW-C
TACOM-ARDEC
1 Rock Island Arsenal
Rock Island, IL 61299-7300

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. Characteristics.

(1) A heavy mortar that is transported by a specially designed trailer (M120).

(2) Can be emplaced on the ground or mounted in a special vehicle (M121).

b. Capabilities and Features.

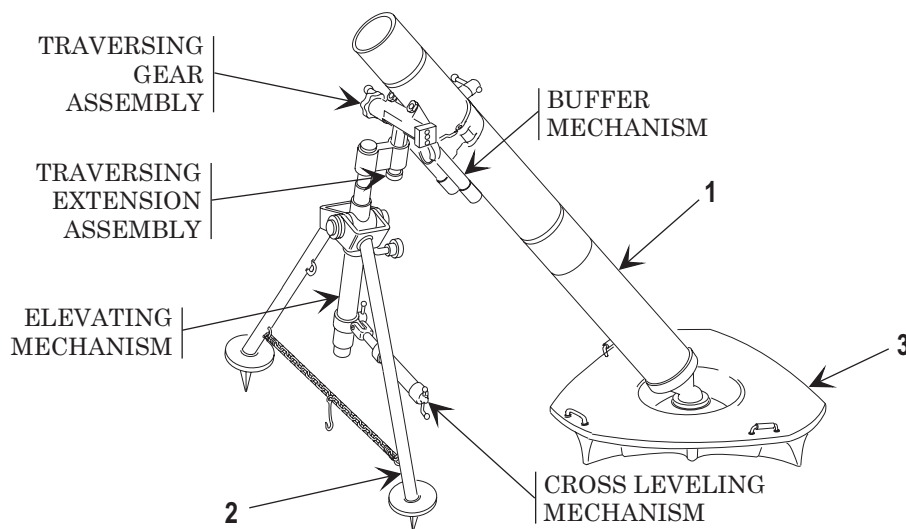
(1) Smooth bore, muzzle-loaded cannon with a removable firing pin.

(2) Capable of delivering various types of ammunition, with a variety of fuzes, at a rapid rate of fire.

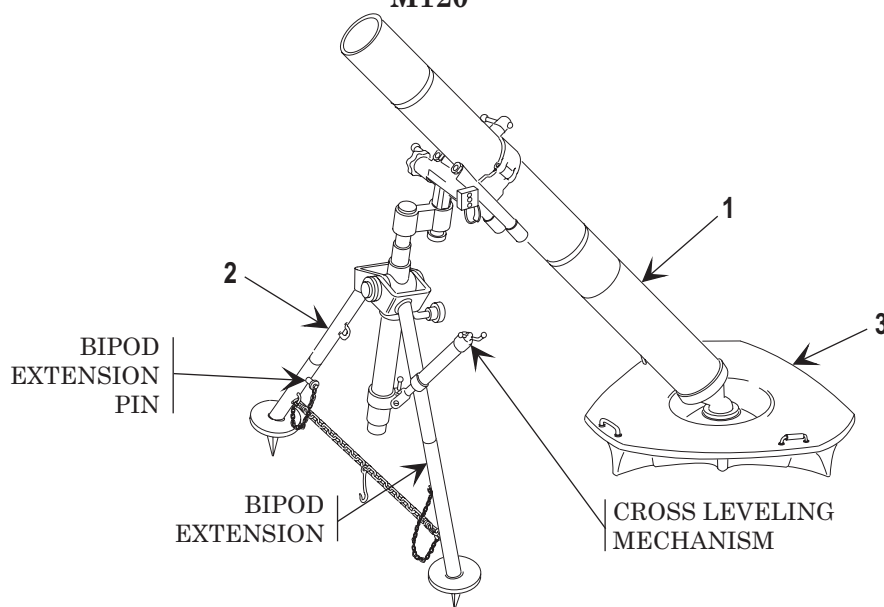
(3) Easily breaks down into transportable sections or can be transported intact on specially designed trailer/mortar carrier.

(4) M67 sight unit gives indirect fire capability.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



M120



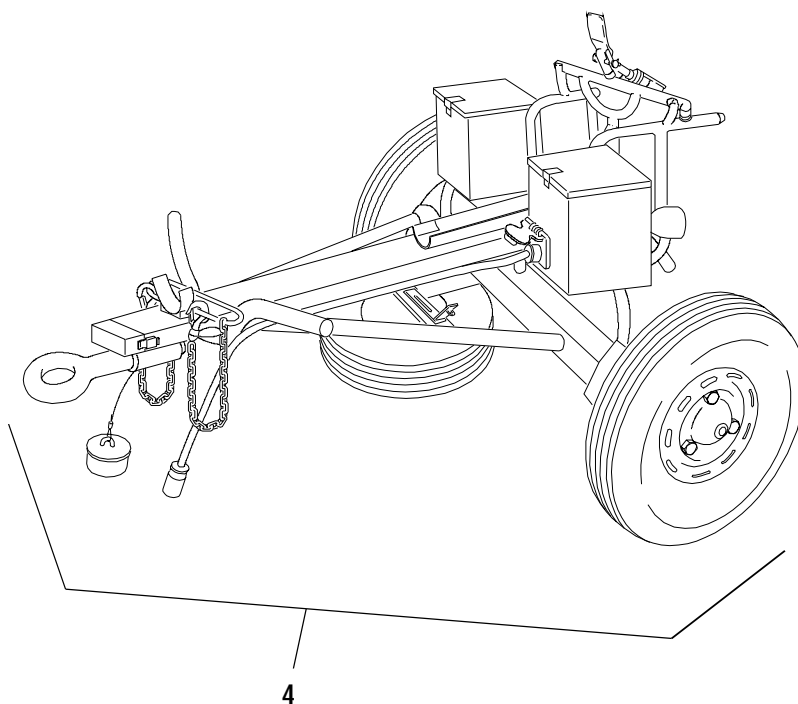
M121

a. M298 120MM CANNON (1). Fires the cartridge. Removable firing pin at breech end. White stripes along and around cannon tube for orientation.

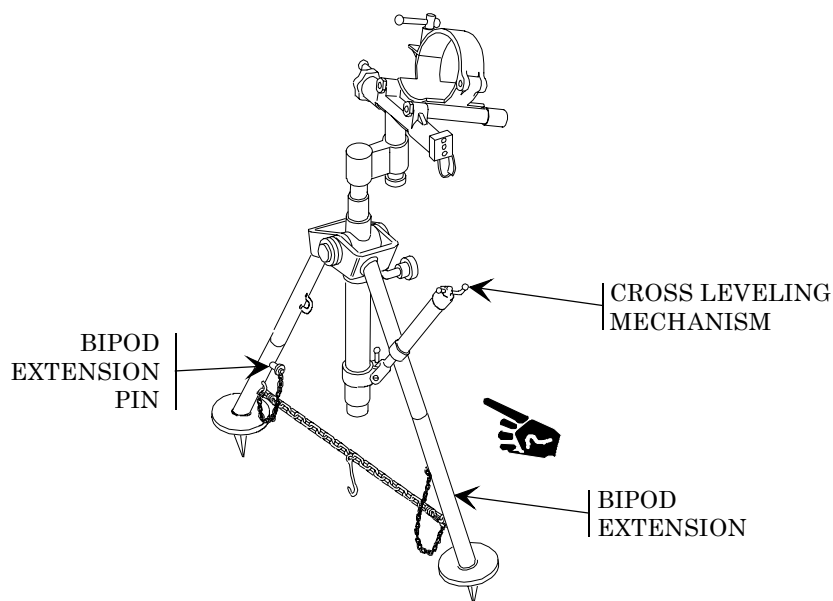
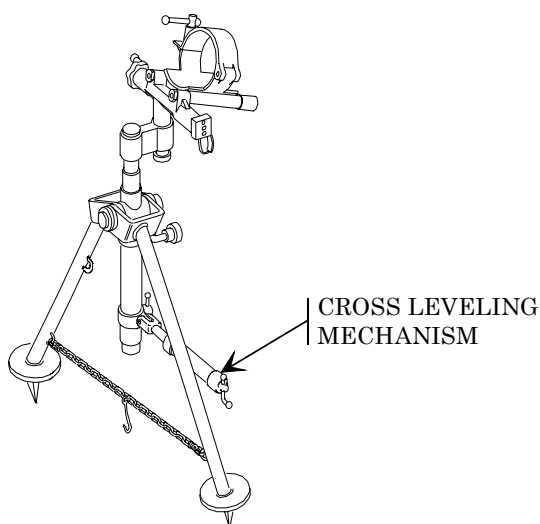
b. M190/M191 MORTAR MOUNT (2). Supports the cannon tube in the conventional mode. Provides means to elevate, traverse, and cross-level the mortar as well as to absorb the shock of recoil.

c. M9 MORTAR BASEPLATE (3). Receives the breech cap of the mortar, stabilizes the weapon, and helps to absorb the shock of recoil.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont).



d. M1100 120MM MORTAR TRAILER (4). Transports the mortar, assists in bringing the mortar in and out of firing position, and carries tools.

1-10. DIFFERENCES BETWEEN MODELS.**M191 Mortar Mount, M121 Mortar (Carrier/Ground Mounted)****M190 Mortar Mount, M120 Mortar (Ground Mount Only)**

The M120 and M121 models of the 120mm mortar differ only in the mortar mount. The bipod leg extension assembly is added to the mortar mount leg when the M121 model is removed from the turntable and is mounted on the ground. The bipod extension pin is used to secure the bipod leg extension assembly. The position of the cross leveling mechanism is different between the two models.

1-11. EQUIPMENT DATA.

PHYSICAL CHARACTERISTICS

Weight on trailer	716 lb (325 kg)
Weight in firing position	317 lb (144 kg)
M298 120mm Cannon	
Weight	110 lb (50 kg)
Length	69 in. (175 cm)
Mortar Mount, M190	
Weight	70 lb (32 kg)
Length (Collapsed).....	51 in. (130 cm)
Mortar Mount, M191	
Weight	68 lb (31 kg)
(with Leg Extension, M191)	78 lb (35 kg)
Length	51 in. (130 cm)
M9 Mortar Baseplate	136 lb (62 kg)
Sighting Equipment	5.2 lb (2.4 kg)
M1100 120mm Mortar Trailer	
Weight	399 lb (181 kg)
Width	59 in. (150 cm)
Length	79 in. (201 cm)
Height	45 in. (114 cm)
Baseplate Mount	37 lb (17 kg)
Bipod Support Assembly	79 lb (36 kg)
Breech Socket Assembly	26 lb (12 kg)
Clamping Support Assembly	11 lb (5 kg)

ELEVATION-CARRIER MOUNTED

High Range	
Minimum.....	974 mils
Maximum	1510 mils
Low Range	
Minimum.....	710 mils
Maximum	1110 mils

ELEVATION-GROUND MOUNTED

Minimum.....	710 mils
Maximum	1510 mils

TRAVERSE-GROUND AND CARRIER MOUNTED

Maximum right or left, using traversing wheel.....	136 mils
One turn of traversing wheel - 5 mils (approximate)	
With traversing extension.....	316 mils

ARC OF FIRE

M120.....	6400 mils
M121.....	800 mils

RANGE

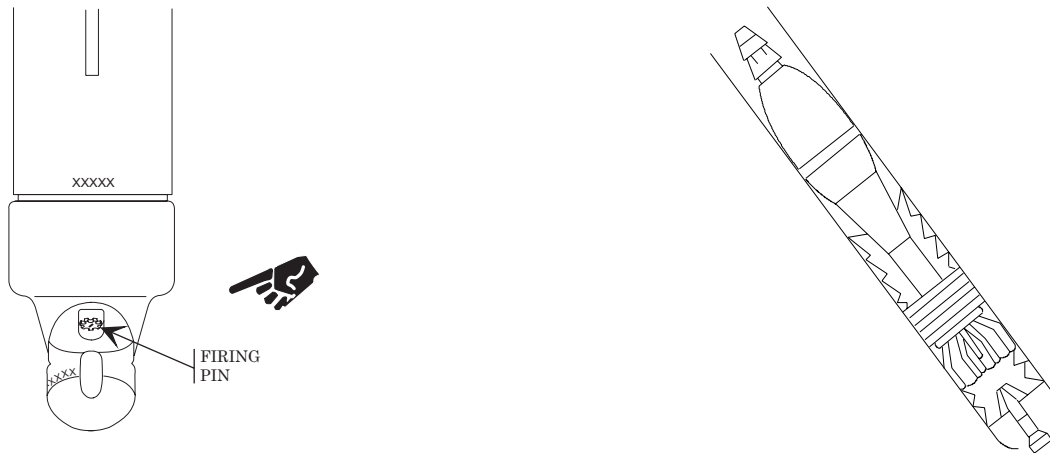
Minimum.....	200 meters
Maximum	7200 meters

RATE OF FIRE

Maximum (for first minute)	16 rounds/min
Sustained (indefinitely, with max charge)	4 rounds/min

Section III. PRINCIPLES OF OPERATION

1-12. PRINCIPLES OF OPERATION.



- 1 Cartridge is fired by dropping a complete round down the cannon tube with firing pin installed and seated securely.
- 2 Primer of cartridge strikes firing pin which then ignites propellant.
- 3 Gas from burning propellant pushes projectile out of cannon tube.

CHAPTER 2

UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

2-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. Special tools are listed in the Repair Parts and Special Tools List, appendix C.

2-3. REPAIR PARTS. Repair parts are listed and illustrated in the Repair Parts and Special Tools List, appendix C.

Section II. SERVICE UPON RECEIPT

2-4. GENERAL. When a new or reconditioned weapon is first received, it is the responsibility of the officer-in-charge to determine whether the weapon has been properly prepared for service by supplying organization and whether it is in proper condition to perform its mission.

2-5. INSPECTING AND SERVICING THE MATERIAL.**WARNING**

Inspect the cannon tube to make sure it is empty. Keep live ammunition out of the area during maintenance operations.

Table 2-1. SERVICE UPON RECEIPT - 120MM MORTAR

LOCATION	ITEM	ACTION	REMARKS
1. Container	Mortar	Remove from container.	
2. Mortar	Cannon tube	Check to make sure the cannon tube is clear of obstructions.	
3. Container	Basic issue items	Check for missing items.	See Appendix B, TM 9-1015-250-10.
4. Mortar	All items	a. Clean and lubricate.	See TM 9-1015-250-10.

NOTE

Wipe excess oil or preservatives from cannon tube.

Table 2-1. SERVICE UPON RECEIPT - 120MM MORTAR (Cont)

LOCATION	ITEM	ACTION	REMARKS
		b. Assemble major subassemblies to assure proper assembly and operation.	See TM 9-1015-250-10.
5. Mortar	Mortar mount	Mark and match mount to a specific cannon tube (i.e., stencil, stamp, paint) to facilitate and confirm scheduled service on assembly.	
6. Mortar	Cannon tube	a. Check that serial numbers on cannon tube and breech cap match.	
		b. Check that Weapon Record Data Card, DA Form 2408-4, is present.	See TM 9-1000-202-14.
7. Container	M67 sight unit	Check for damaged or missing parts.	See TM 9-1015-250-10.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-6. GENERAL. The required PMCS procedures are listed in the table below. Table 2-1 (PMCS) has been provided so you can keep your equipment in good operating condition and ready for its primary mission. These services should be done by the unit armorer with the crew's assistance. Perform PMCS every 90 days if the weapon has not been used during that time.

NOTE

For semiannual maintenance of the M190/M191 mortar mount, notify direct support maintenance.

2-7. WARNINGS AND CAUTIONS. Always observe the **WARNINGS** and **CAUTIONS** appearing in your PMCS table. Warnings and cautions appear before applicable procedures. You must observe these **WARNINGS** and **CAUTIONS** to prevent serious injury to yourself and others or prevent your equipment from being damaged.

2-8. EXPLANATION OF TABLE ENTRIES.

a. Item No. column. Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the interval listed.

b. Interval column. This column tells you when you must do the procedure in the procedure column.

c. Item To Be Checked or Serviced column. The items listed in this column divide the mortar into groups. These groupings identify the item to be inspected in as few words as possible, usually by the common name.

d. Procedure column. This column briefly describes how to perform the check or service and uses illustrations when practical. You must do the procedure at the time stated in the interval column.

e. Not Fully Mission Capable if: column. Information in this column tells what faults will keep the equipment from being capable of performing its primary mission.

**Table 2-2. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES
FOR M120/M121 MORTAR**

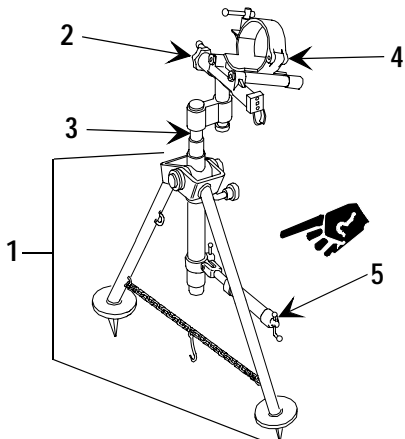
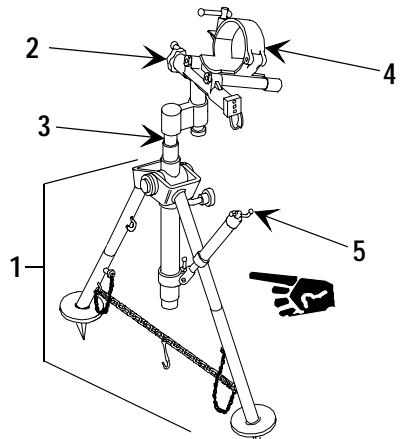
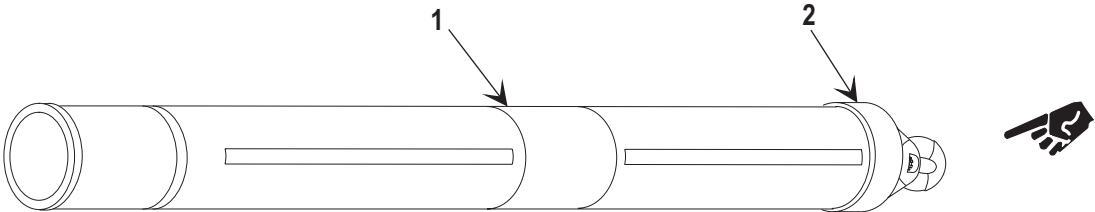
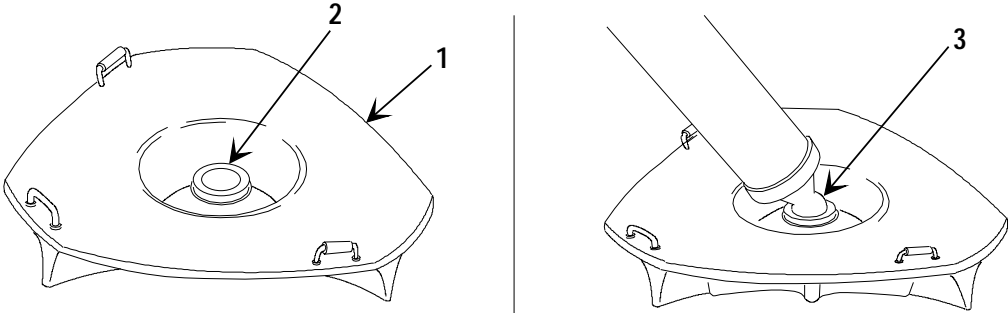
Item No.	Interval	Item To Be Checked or Serviced	Procedure	Not Fully Mission Capable if:
1	Quarterly	M190/M191 Mortar Mount		
		 <p align="center">M190</p>	<p>Check M190/M191 mortar mount leg assembly (1) for cracks, broken welds, rust, and loose, missing, or damaged parts.</p> <p>Traversing gear assembly (2) and elevating mechanism (3) must operate smoothly and without binding throughout entire range of travel.</p> <p>Buffer mechanism (4) must retract completely with buffing action when pulled to the rear.</p> <p>Cross leveling mechanism (5) must operate smoothly and without binding through the entire range of travel.</p>	 <p align="center">M191</p> <p>M190/M191 mortar mount leg assembly has cracks, broken welds, or loose, missing, or damaged parts.</p> <p>Traversing gear assembly and/or elevating mechanism are inoperative or binding.</p> <p>Buffer mechanism does not completely retract with buffing action when pulled to the rear.</p> <p>Cross leveling mechanism binds or does not operate in a smooth manner through entire range of travel.</p>

Table 2-2. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES
FOR M120/M121 MORTAR (Cont)

Item No.	Interval	Item To Be Checked or Serviced	Procedure	Not Fully Mission Capable if:
2	Quarterly	M298 120mm Cannon		
			<p>Check cannon tube (1) and breech assembly (2) for unusual wear and/or damage.</p> <p>Check mating surfaces of cannon tube (1) and breech assembly (2) for cleanliness and gas-tight seal.</p>	<p>Cannon tube and/or breech assembly have cracks, dents, bulges, or other unusual wear.</p> <p>Mating surfaces of cannon tube and/or breech assembly are not clean or do not seal.</p>
3	Quarterly	M9 Mortar Baseplate		
			<p>Check mortar baseplate (1) and socket (2) for physical damage, deformation, corrosion, or cracks.</p> <p>Check socket (2) and ensure breech cap ball (3) rotates freely without sticking or binding.</p>	<p>Mortar baseplate and/or socket is damaged, deformed, cracked, or corroded.</p> <p>Breech cap ball does not rotate freely or sticks or binds in socket.</p>

**Table 2-2. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES
FOR M120/M121 MORTAR (Cont)**

Item No.	Interval	Item To Be Checked or Serviced	Procedure	Not Fully Mission Capable if:
4	Quarterly	M1100 120mm Mortar Trailer	Check for proper operation of towing eye, trailer frame, tires, and all mounting assemblies. Check for broken welds and damaged, deformed, or missing parts.	Trailer has damaged or missing parts.

Section IV. UNIT TROUBLESHOOTING

2-9. GENERAL.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the 120mm mortar. The crew will return the weapon to you, indicating the problem. Each malfunction for an individual component unit or system is followed by a list of test/inspections which will help you to determine the corrective actions to take. You should perform the test/inspections and corrective actions in the order listed.

NOTE

Refer to TM 9-1000-202-14, Evaluation of Cannon Tubes, for borescope and pullover gaging requirements.

b. This manual cannot list all malfunctions that may occur, nor all test/inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, see individual repair section for maintenance instructions on each major assembly.

2-10. TROUBLESHOOTING PROCEDURES. Refer to troubleshooting table for malfunctions, test and corrective actions. The malfunction index is provided for a quick reference of malfunctions covered in the table.

MALFUNCTION INDEX

	Troubleshooting Procedure Page
M9 MORTAR BASEPLATE	
M298 120mm cannon jumps out of M9 mortar baseplate when firing.....	2-6
M298 120MM CANNON	
M298 120mm cannon jumps out of M9 mortar baseplate when firing.....	2-7
Cartridge fails to slide down M298 120mm cannon	2-7

MALFUNCTION INDEX (Cont)

	Troubleshooting Procedure Page
M190/M191 MORTAR MOUNT	
Buffer mechanism does not function or hangs out of battery	2-7
Difficulty in traversing weapon	2-7
Backlash in traversing gear assembly exceeds 1/8 turn	2-7
Difficulty in elevating weapon	2-8
Backlash in elevating mechanism exceeds 1/8 turn	2-8
Difficulty in rotating traversing extension assembly	2-8
Difficulty in cross-leveling weapon	2-8
Backlash in cross leveling mechanism exceeds 1/8 turn	2-8
M1100 120MM MORTAR TRAILER	
Muzzle plug assembly will not stay in muzzle or attached to trailer	2-8
Trailer left or right accessories stowage box damaged or lid will not open or close	2-9
Trailer bridge assembly does not lock M298 120mm cannon, M190 mortar mount, and M9 mortar baseplate onto trailer	2-9
Trailer torsion bar arm resting on stop pad or will not move	2-9
Trailer wheel squeals when turning or does not turn freely	2-9
Trailer lights do not work	2-9
BASIC ISSUE ITEMS	
Artillery cleaning staff assembly cannot be fully extended and locked in position. Lower staff section sleeve does not snap into extended, locked position after retracting evenly	2-10
Cartridge extractor fails to grasp cartridge	2-10

Table 2-3. UNIT TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

M9 MORTAR BASEPLATE**1. M298 120MM CANNON JUMPS OUT OF M9 MORTAR BASEPLATE WHEN FIRING.**

Inspect mortar baseplate socket rim. It must not be damaged.

Replace mortar baseplate (p 2-11).

Table 2-3. UNIT TROUBLESHOOTING (Cont)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
M298 120MM CANNON		
2. M298 120MM CANNON JUMPS OUT OF M9 MORTAR BASEPLATE WHEN FIRING.		
	Inspect breech cap ball. It must not be severely dented.	
	Evacuate to direct support maintenance for replacement.	
3. CARTRIDGE FAILS TO SLIDE DOWN M298 120MM CANNON.		
	Inspect cannon tube bore.	
	Step 1. Clean with borebrush assembly per TM 9-1015-250-10.	
	Step 2. If cartridge still fails to slide down cannon tube, evacuate to direct support maintenance for replacement.	
M190/M191 MORTAR MOUNT		
4. BUFFER MECHANISM DOES NOT FUNCTION OR HANGS OUT OF BATTERY.		
	With both hands, pull buffer housing assembly sharply to the rear and release. Repeat three times. Buffer mechanism should retract completely with buffing action.	
	If buffer mechanism does not retract, evacuate to direct support maintenance for repair.	
5. DIFFICULTY IN TRAVERSING WEAPON.		
	Traverse weapon through entire range. It must travel smoothly and evenly.	
	Evacuate to direct support maintenance for repair.	
6. BACKLASH IN TRAVERSING GEAR ASSEMBLY EXCEEDS 1/8 TURN.		
	Check for backlash through entire range of motion. It must not exceed 1/8 turn (45 degrees).	
	Evacuate to direct support maintenance for repair.	

Table 2-3. UNIT TROUBLESHOOTING (Cont)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

7. DIFFICULTY IN ELEVATING WEAPON.

Operate mortar through entire range of elevation. It must elevate smoothly and evenly.

Evacuate to direct support maintenance for repair.

8. BACKLASH IN ELEVATING MECHANISM EXCEEDS 1/8 TURN.

Check for backlash through entire range of motion. It must not exceed 1/8 turn (45 degrees).

Evacuate to direct support maintenance for repair.

9. DIFFICULTY IN ROTATING TRAVERSING EXTENSION ASSEMBLY.

Place traversing extension in all three positions. It must move smoothly from one to the other and lock.

Evacuate to direct support maintenance for repair.

10. DIFFICULTY IN CROSS-LEVELING WEAPON.

Operate cross leveling mechanism through entire range of movement. It must operate smoothly and evenly.

Evacuate to direct support maintenance for repair.

11. BACKLASH IN CROSS LEVELING MECHANISM EXCEEDS 1/8 TURN.

Check for backlash through entire range of motion. It must not exceed 1/8 turn (45 degrees).

Evacuate to direct support maintenance for repair.

M1100 120MM MORTAR TRAILER

12. MUZZLE PLUG ASSEMBLY WILL NOT STAY IN MUZZLE OR ATTACHED TO TRAILER.

Inspect muzzle plug.

Repair muzzle plug assembly (p 2-23).

Table 2-3. UNIT TROUBLESHOOTING (Cont)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
13. TRAILER LEFT OR RIGHT ACCESSORIES STOWAGE BOX DAMAGED OR LID WILL NOT OPEN OR CLOSE.		
	Inspect left or right accessories stowage box.	
	Replace left or right accessories stowage box (p 2-16).	
14. TRAILER BRIDGE ASSEMBLY DOES NOT LOCK M298 190MM CANNON, M190 MORTAR MOUNT, AND M9 MORTAR BASEPLATE ONTO TRAILER.		
	Inspect trailer bridge assembly.	
	Replace trailer bridge assembly (p 2-26).	
15. TRAILER TORSION BAR ARM RESTING ON STOP PAD OR WILL NOT MOVE.		
	Lift and push down on each side of trailer frame. Torsion bar arm must flex evenly.	
	Replace torsion bar assembly (p 2-30).	
16. TRAILER WHEEL SQUEALS WHEN TURNING OR DOES NOT TURN FREELY.		
	Inspect bearings for lubrication and/or damage.	
	Step 1. Lubricate thrust roller bearings (TM 9-1015-250-10).	
	Step 2. Replace thrust roller bearings (p 2-30).	
17. TRAILER LIGHTS DO NOT WORK.		
	Connect cable assembly to vehicle or to 12-volt simulator. Test right and left taillights, right and left stoplights, and right and left turn signals.	
	Step 1. Replace incandescent lamp (p 2-36).	
	Step 2. Replace stoplight-taillight assembly (p 2-36).	
	Step 3. Replace front cable assembly (p 2-33).	
	Step 4. Replace rear cable assembly (p 2-33).	

Table 2-3. UNIT TROUBLESHOOTING (Cont)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

BASIC ISSUE ITEMS

18. ARTILLERY CLEANING STAFF ASSEMBLY CANNOT BE FULLY EXTENDED AND LOCKED IN POSITION. LOWER STAFF SECTION SLEEVE DOES NOT SNAP INTO THE EXTENDED, LOCKED POSITION AFTER RETRACTING EVENLY.

Inspect artillery cleaning staff assembly.

Repair artillery cleaning staff assembly (p 2-43).

19. CARTRIDGE EXTRACTOR FAILS TO GRASP CARTRIDGE.

Inspect cartridge extractor for sharp, unbroken tabs on the catches. The springs forcing the catches to grasp the cartridge must return the catches to their innermost positions sharply.

Repair cartridge extractor (p 2-47).

Section V. UNIT MAINTENANCE PROCEDURES

2-11. GENERAL MAINTENANCE INSTRUCTIONS.

Painting. After completion of the repair of many assemblies, touchup with CARC paint may be required (refer to **WARNINGS** inside front cover). All touchup painting is the responsibility of unit maintenance personnel. Refer to TM 43-0139, Painting Instructions for Army Materiel, for all detailed procedures necessary to perform these tasks.

2-12. M120/M121 120MM MORTAR.

This task covers:

Inspection/Repair

INITIAL SETUP

Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

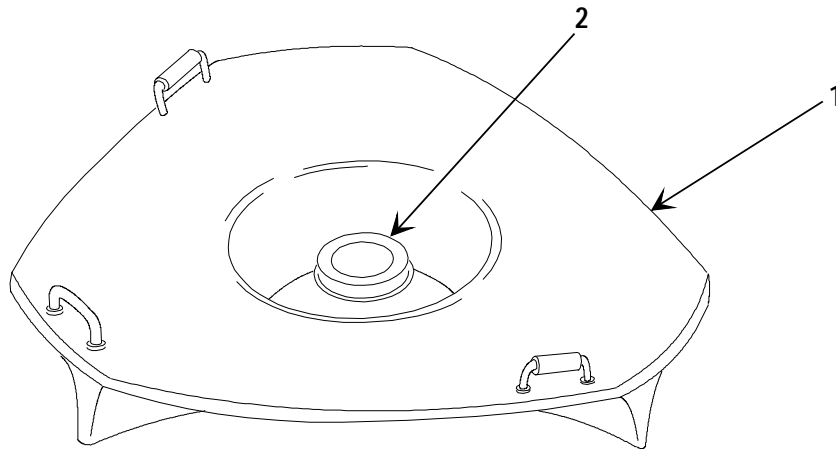
Equipment Condition

M9 mortar baseplate resting on
ground, bench, or floor

References

TM 9-1015-250-10

INSPECTION/REPAIR



- 1 Inspect for physical damage, deformation, corrosion, and cracks. If the mortar baseplate (1) is cracked, replace as authorized in Repair Parts and Special Tools List, appendix C. Remove corrosion. If the socket (2) for the M298 120mm cannon is deformed, perform step 2.
- 2 Using a breech assembly removed from a cannon tube (TM 9-1015-250-10), check socket functioning. Make sure the breech assembly can be inserted into the socket of the M9 mortar baseplate. Make sure breech cap ball rotates freely. Make sure the baseplate only allows removal of the breech assembly when it is correctly positioned. If the socket is deformed so that it cannot function, replace M9 mortar baseplate as authorized in Repair Parts and Special Tools List, appendix C.

2-13. M298 120MM CANNON.

This task covers:

Inspection/Service

INITIAL SETUP

Tools/Special Tools

Gage, firing pin 12901151
Removal tool, breech cap 12901153
Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)
Wrench, firing pin 12901194

References

TM 9-1015-250-10

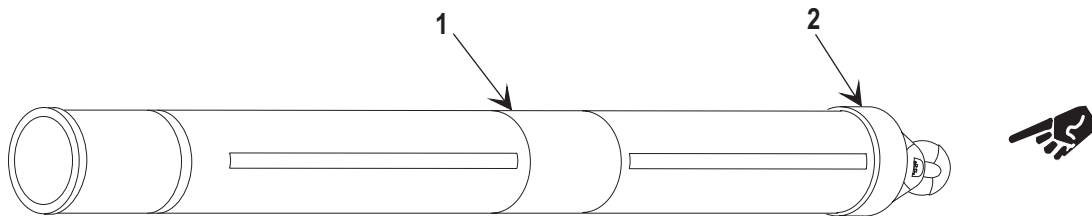
Equipment Condition

M298 120mm cannon removed from
M190/M191 mortar mount
(TM 9-1015-250-10)

Materials/Parts

Abrasive cloth (item 8, app D)

INSPECTION/SERVICE



- 1 Inspect for deformations, cracks, corrosion, and visible discoloration. If cannon tube (1) is burred, cracked, or damaged, notify direct support maintenance.

WARNING

Dented cannon tubes must be replaced as they are unsafe for firing.

- 2 Examine cannon tube (1) for burrs, dents, cracks, and deformities.
- 3 Remove burrs ONLY from the exterior of the cannon tube (1) and breech assembly (2).

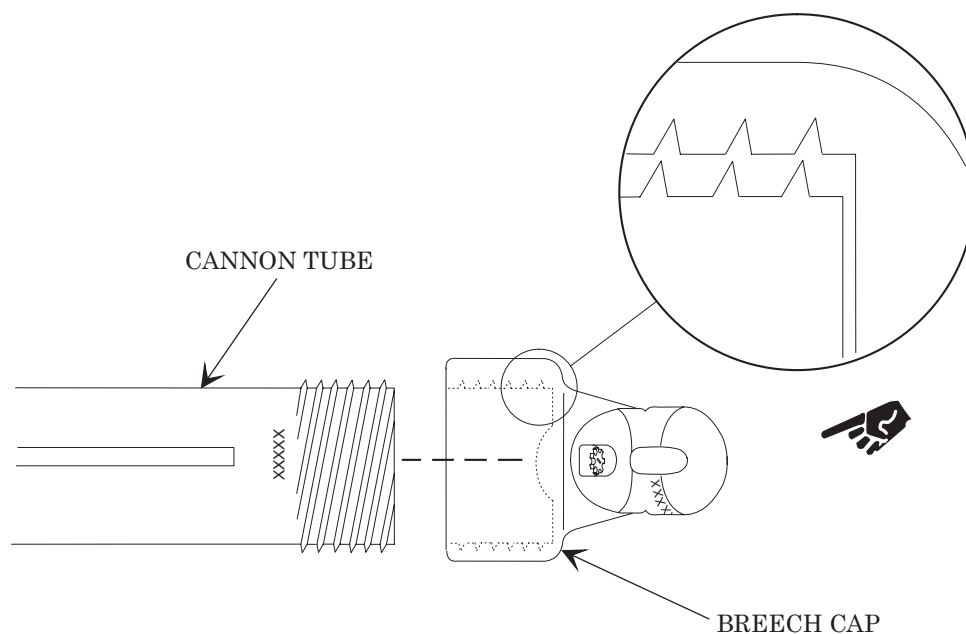
WARNING

Firing pin must line up with stripe on barrel.

NOTE

For removal of firing pin, refer to TM 9-1015-250-10.

- 4 Inspect firing pin for proper operation and firing pin protrusion.



CAUTION

Sealing surfaces of cannon tube and breech assembly are lapped as a matched set at manufacture. Do not use abrasives. Evacuate to Direct Support for evaluation if nicks, burrs, dents, erosion, or evidence of leakage is found.

2-14. M190/M191 MORTAR MOUNT.

This task covers:

a. Inspection

b. Replacement

INITIAL SETUP

Materials/Parts

Abrasive cloth (item 8, app D)

Equipment Condition

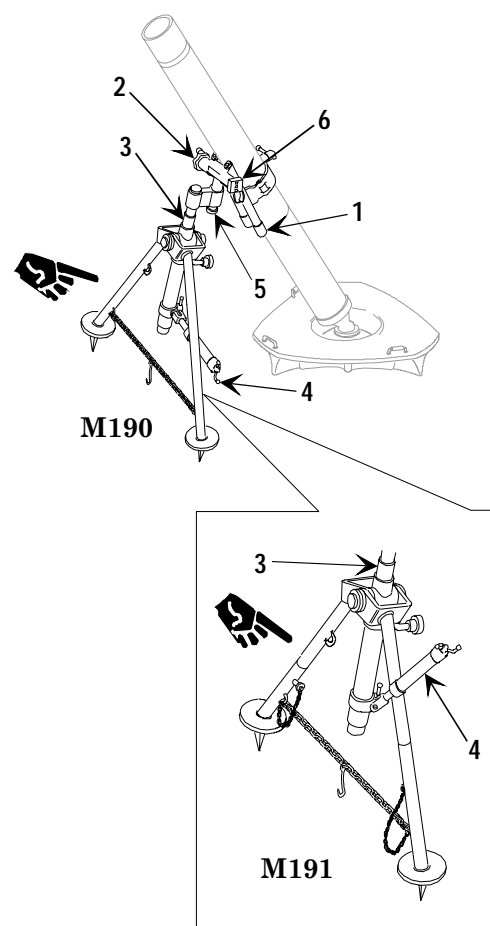
M120/M121 mortar in firing position
(TM 9-1015-250-10)

References

TM 9-1015-250-10

INSPECTION

- 1 Inspect for physical damage, deformation, and corrosion. Remove any burrs or nicks. Notify direct support maintenance for repair.
- 2 With both hands, pull buffer housing assembly (1) to the rear and release. Repeat three times. Buffer housing assembly should retract completely with no excess free movement. Notify direct support maintenance for repair.
- 3 Operate traversing gear assembly (2) through entire range and check backlash. It must travel smoothly and evenly. Backlash must not exceed 1/8 turn (45 degrees). Notify direct support maintenance for repair.
- 4 Operate elevating mechanism (3) through entire range, checking backlash at least three times. It must travel smoothly and evenly. Backlash must not exceed 1/8 turn (45 degrees). Notify direct support maintenance for repair.
- 5 Operate cross leveling mechanism (4) through entire range, checking backlash at least three times. It must travel smoothly and evenly. Backlash must not exceed 1/8 turn (45 degrees). Notify direct support maintenance for repair.
- 6 Operate traversing extension assembly (5) for proper functioning in all three positions.
- 7 Inspect sightunit adapter cover (6). Repair or replace if defective.



REPLACEMENT

Replace M190/M191 mortar mount as authorized in Repair Parts and Special Tools List, appendix C.

2-15. M190/M191 BIPOD LEG ASSEMBLY, BIPOD LEG EXTENSION ASSEMBLY, AND CHAIN ASSEMBLY.

This task covers:

a. Inspection

b. Replacement

INITIAL SETUP

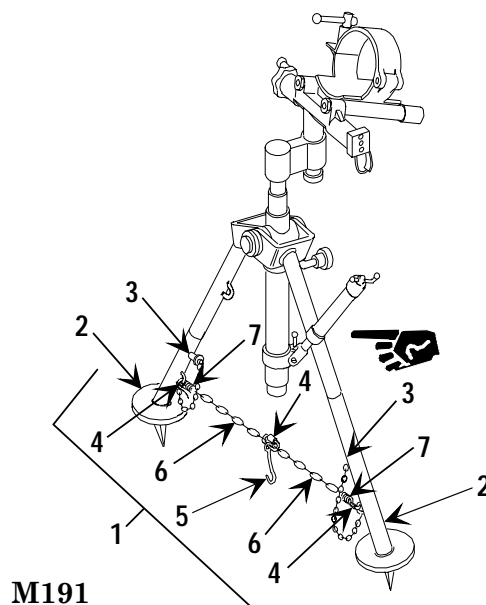
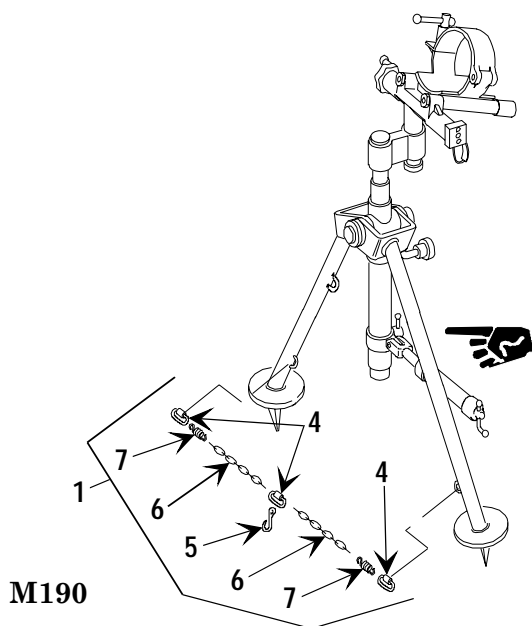
Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

Materials/Parts

Abrasive cloth (item 8, app D)

INSPECTION



- 1 Inspect chain assembly (1) for damage and missing parts.
- 2 On M191 mortar mount, inspect two mortar mount leg sections (2) for physical damage, deformation, and corrosion. Remove any burrs or nicks from leg sections with abrasive cloth (item 8, app D). Inspect two locking pin assemblies (3) for damage.

REPLACEMENT

- 1 If damaged or missing, replace rings (4), hook (5), chains (6), and springs (7) as authorized by Repair Parts and Special Tools List, appendix C.
- 2 If damaged or missing, replace mortar mount leg sections (2) and locking pin assemblies (3) as authorized by Repair Parts and Special Tools List, appendix C.

2-16. TRAVERSING GEAR ASSEMBLY AND SIGHTUNIT ADAPTER COVER.

This task covers:

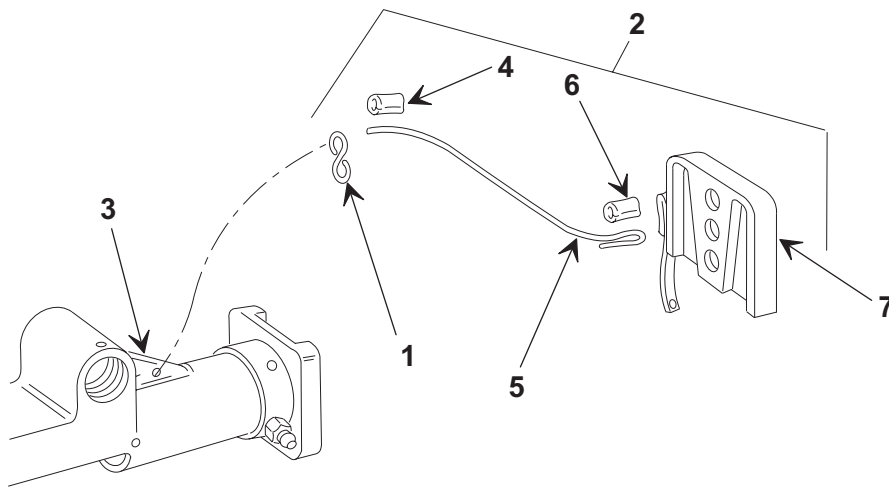
- a. Disassembly
- b. Inspection/Repair
- c. Reassembly

INITIAL SETUP

Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

DISASSEMBLY



- 1 Bend chain hook (1) to remove sightunit adapter cover (2) from traversing gear assembly (3).
- 2 Remove chain hook (1) and swaging sleeve (4) from jacketed wire rope (5).
- 3 Remove swaging sleeve (6) and jacketed wire rope (5) from cover (7).

INSPECTION/REPAIR

Inspect sightunit adapter cover for damage or wear. Replace any defective components as authorized by Repair Parts and Special Tools List, appendix C.

REASSEMBLY

- 1 Install jacketed wire rope (5) on cover (7) and secure with swaging sleeve (6).
- 2 Install swaging sleeve (4) and chain hook (1) on jacketed wire rope (5).
- 3 Install sightunit adapter cover (2) on traversing gear assembly (3) and secure by bending chain hook (1).

2-17. M1100 120MM MORTAR TRAILER.

This task covers:

- a. Disassembly
- b. Inspection/Repair

- c. Reassembly

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

Materials/Parts

Adhesive (item 1, app D)
Cotter pin 93-677
Cotter pin MS24665-287 (6)
Lockwasher MS35338-47 (5)
Lockwasher 93-30 (12)
Lockwasher 93-1259 (8)

References

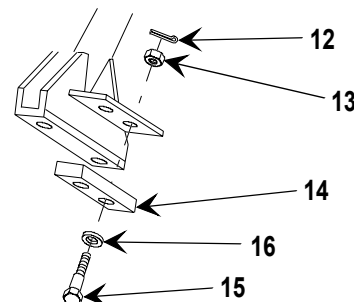
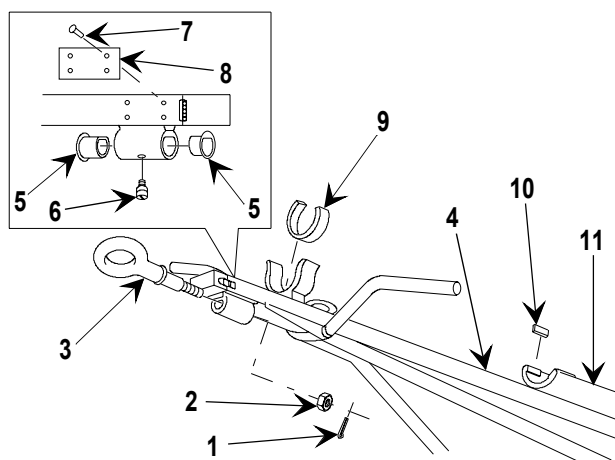
TM 9-1015-250-10

Equipment Condition

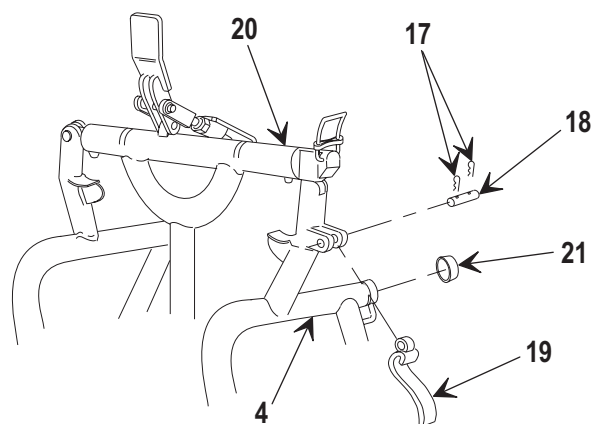
M120 mortar removed from trailer
(TM 9-1015-250-10)
Pneumatic tire wheel removed
from trailer (TM 9-1015-250-10)
Spare tire removed from spare tire
mounting assembly (if desired
for easier accessibility)
(TM 9-1015-250-10)

DISASSEMBLY

- 1 Remove and discard cotter pin (1) and remove hexagon castellated plain nut (2). Withdraw towing eye (3) from trailer frame (4).
- 2 If damaged, remove and discard two sleeve bushings (5).
- 3 If damaged, remove lubrication fitting (6).
- 4 If damaged, remove four blind rivets (7) and identification plate (8).
- 5 If damaged, remove neoprene pad (9).
- 6 If damaged, remove four neoprene pads (10) from cannon cradle (11).
- 7 Remove and discard two cotter pins (12). Remove two hexagon castellated plain nuts (13) using 17mm wrench and remove cushioning pad (14) with two hexagon head capscrews (15) and two flat washers (16). Repeat to remove cushioning pad from other side of trailer.

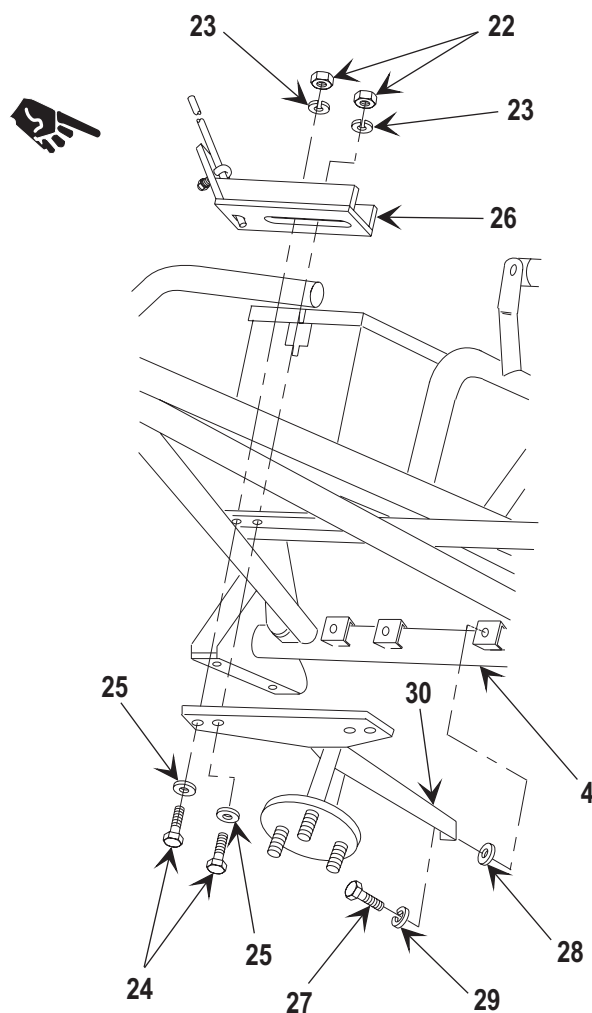


- 8 Remove and discard two cotter pins (17). Remove headless straight pin (18) and clamping catch (19) from trailer bridge assembly (20).
- 9 If damaged, remove two nonmetallic bumpers (21) from trailer frame (4).



NOTE

- Step 10 is written and illustrated for the removal of one driver's vision device, but applies to both.
 - For complete removal of spare tire mounting assembly, perform steps 10 and 11.
- 10 Remove two hexagon plain nuts (22), two lockwashers (23), two hexagon head capscrews (24), two flat washers (25), and driver's vision device (26). Discard lockwashers.



NOTE

The quantity of flat washers to be removed in step 11 may vary. Extra flat washers may be used as spacers.

- 11 Remove hexagon head capscrew (27), flat washer (28), lockwasher (29), and spare tire mounting assembly (30) from trailer frame (4). Discard lockwasher.

2-17. M1100 120MM MORTAR TRAILER (Cont).

DISASSEMBLY (Cont)

12 If damaged, remove protective bar (31) from trailer frame (4).

NOTE

- Removal of left and right accessories stowage boxes is identical. The right accessories stowage box is used in this procedure.
- Electrical wiring assembly must be removed before the left accessories stowage box is removed. Refer to page 2-33.

13 Using 10mm socket wrench, remove six hexagon head capscrews (32) from accessories box (33). Remove and discard six lockwashers (34). Remove access cover (35) from accessories box. If damaged, remove nonmetallic grommet (36).

14 Disconnect wiring and pull portion of wiring harness from accessories box.

NOTE

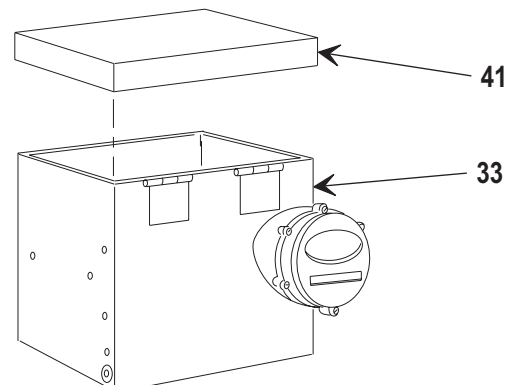
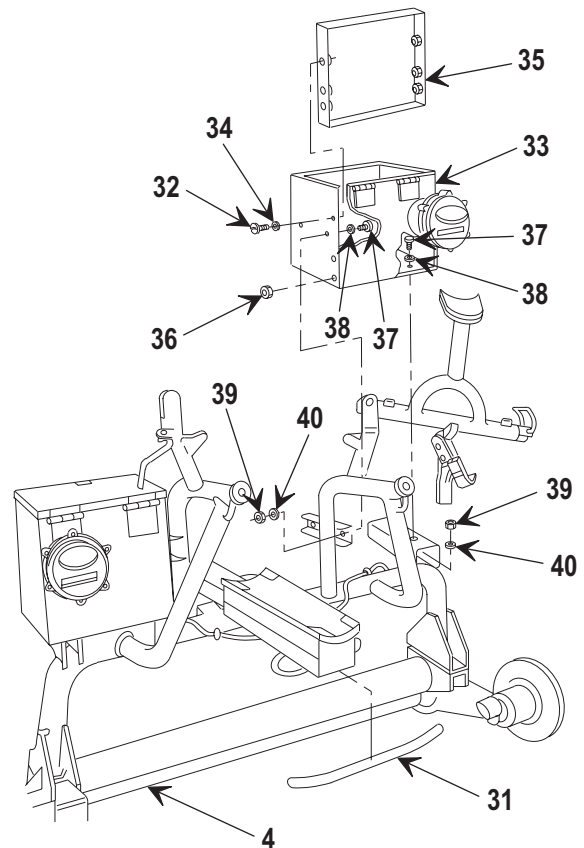
Refer to page 2-36 for removal and repair of stoplight-taillight assembly.

15 Using 13mm socket wrench, remove hexagon head capscrews (37), flat washers (38), hexagon plain nuts (39), and lockwashers (40) from bottom and side of accessories box (33). Discard lockwashers.

NOTE

Lid is not shown for clarity purposes but is not removable.

16 Using putty knife, break bond between cushioning pad (41) and bottom of accessories box (33) and remove cushioning pad.



INSPECTION/REPAIR

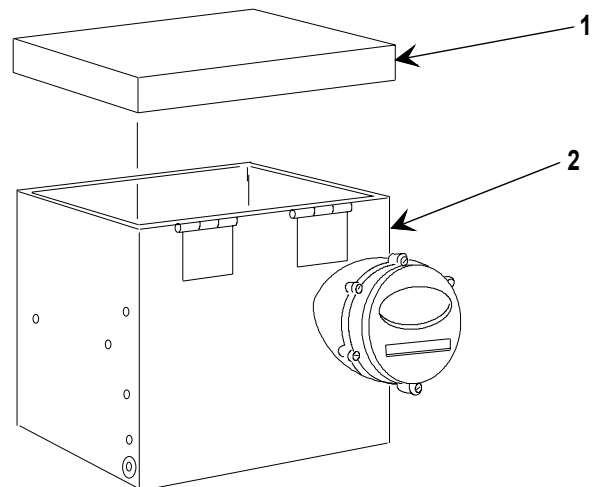
- 1 Inspect for damage and worn threads on towing eye. Restore threads or replace towing eye as authorized in Repair Parts and Special Tools List, appendix C.
- 2 Inspect trailer frame for cracks, broken welds, and other external damage. Replace as authorized in Repair Parts and Special Tools List, appendix C.
- 3 For complete disassembly of driver's vision device, refer to page 2-40.
- 4 For complete disassembly of trailer bridge assembly, refer to page 2-26.
- 5 Inspect spare tire mounting assembly for damage, deformation, corrosion, and broken welds. Inspect lugs for stripped or broken threads. Check for missing or broken hexagon plain nuts. Replace any defective item(s) as authorized in Repair Parts and Special Tools List, appendix C.
- 6 Inspect cushioning pad for brittleness. Replace as authorized in Repair Parts and Special Tools List, appendix C.
- 7 Inspect accessories boxes for deterioration and corrosion. Remove rust and recoat. Replace as authorized in Repair Parts and Special Tools List, appendix C.
- 8 Inspect for worn or defective parts. Replace as authorized in Repair Parts and Special Tools List, appendix C.

REASSEMBLY

NOTE

Lid is not shown for clarity purposes but is not removable.

- 1 Spread adhesive (item 1, app D) on one side of cushioning pad (1). Allow adhesive to become tacky. Position cushioning pad in bottom of accessories box (2) and press down. Allow to dry at least one hour.



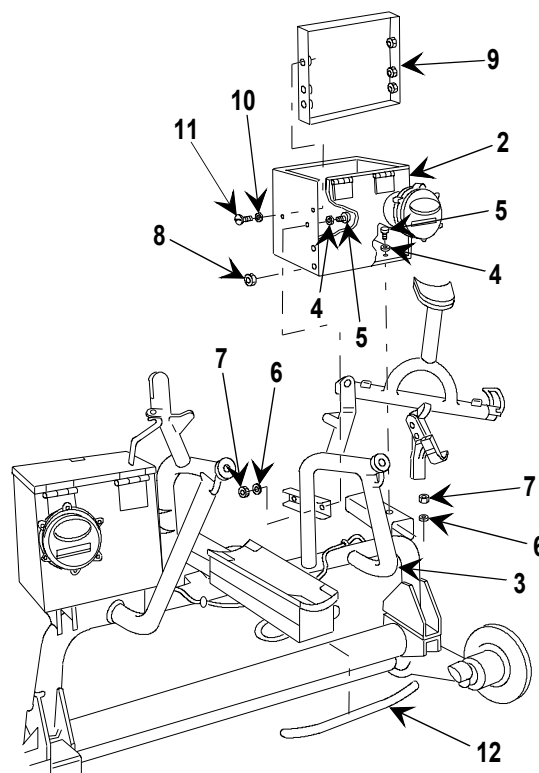
2-17. M1100 120MM MORTAR TRAILER (Cont).

REASSEMBLY (Cont)

NOTE

Installation of left and right accessories stowage boxes is identical. The right accessories stowage box is used in this procedure.

- 2** Install accessories box (2) to trailer frame (3) using 13mm socket wrench and secure in place with flat washers (4), hexagon head capscrews (5), new lockwashers (6), and hexagon plain nuts (7).
- 3** Install wiring harness into accessories box and connect wiring. If removed, replace nonmetallic grommet (8).
- 4** Install access cover (9). Using 10mm socket wrench, secure access cover with six new lockwashers (10) and hexagon head capscrews (11).
- 5** If removed, install new protective bar (12) on trailer frame (3).



NOTE

- Step 6 is written and illustrated for the installation of one driver's vision device, but applies to both.
- For complete installation of spare tire mounting assembly, perform steps 6 and 7.

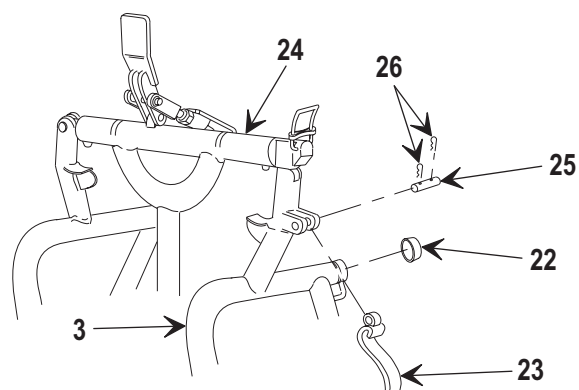
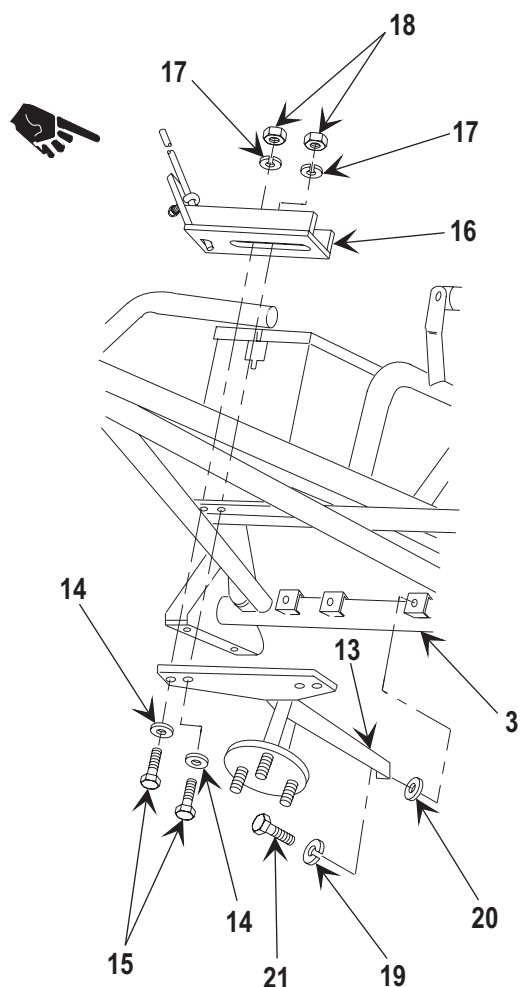
- 6 Install spare tire mounting assembly (13), two flat washers (14), two hexagon head capscrews (15), driver's vision device (16), two new lockwashers (17), and two hexagon plain nuts (18).

NOTE

The quantity of flat washers to be installed in step 7 may vary. Extra flat washers may be used as spacers.

- 7 Install new lockwasher (19), flat washer (20), and hexagon head capscrew (21) to secure spare tire mounting assembly (13) to trailer frame (3).

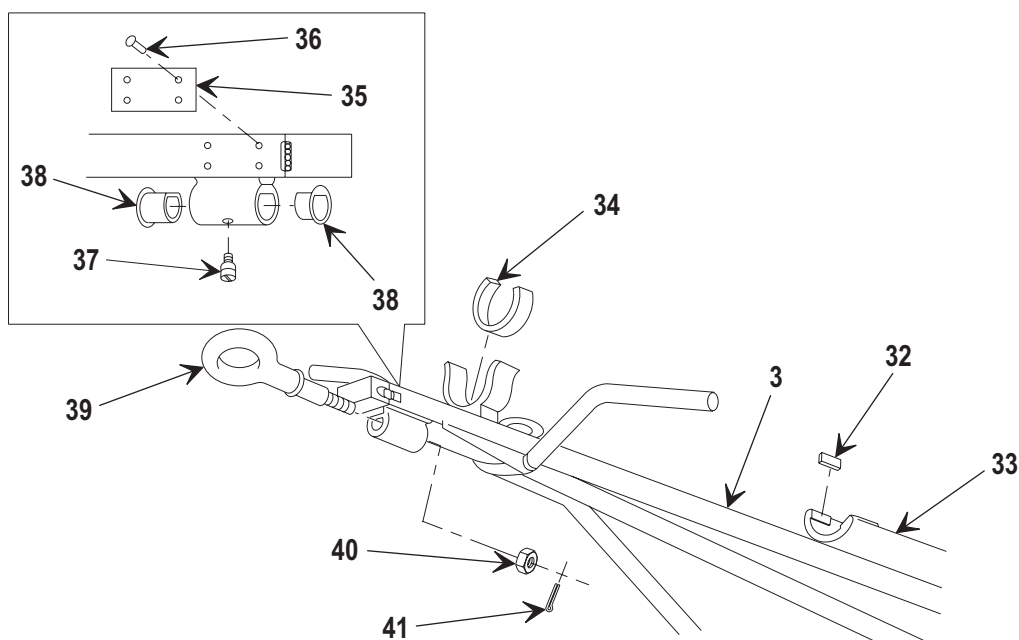
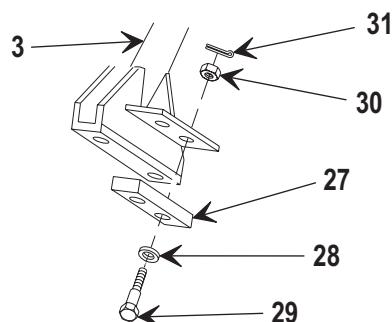
- 8 If removed, install two new nonmetallic bumpers (22) to trailer frame (3).
- 9 Install clamping catch (23) to trailer bridge assembly (24) with headless straight pin (25). Secure with two new cotter pins (26).



2-17. M1100 120MM MORTAR TRAILER (Cont).

REASSEMBLY (Cont)

- 10** Secure cushioning pad (27) to trailer frame (3) with two flat washers (28), two hexagon head capscrews (29), and two hexagon castellated plain nuts (30). Tighten nuts using 17mm wrench. Install two new cotter pins (31). Repeat to install cushioning pad on other side of trailer.



- 11** If removed, install four new neoprene pads (32) on cannon cradle (33), using adhesive (item 1, app D).
- 12** If removed, install new neoprene pad (34) with adhesive (item 1, app D).
- 13** If removed, install new identification plate (35) with four new blind rivets (36).
- 14** If removed, install new lubrication fitting (37).
- 15** If removed, install two new sleeve bushings (38).
- 16** Attach towing eye (39) to trailer frame (3) with hexagon castellated plain nut (40). Secure nut with new cotter pin (41).

2-18. MUZZLE PLUG ASSEMBLY.

This task covers:

a. Inspection

b. Replacement

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool Kit (SC 5180-90-CL-N26).

Equipment Condition

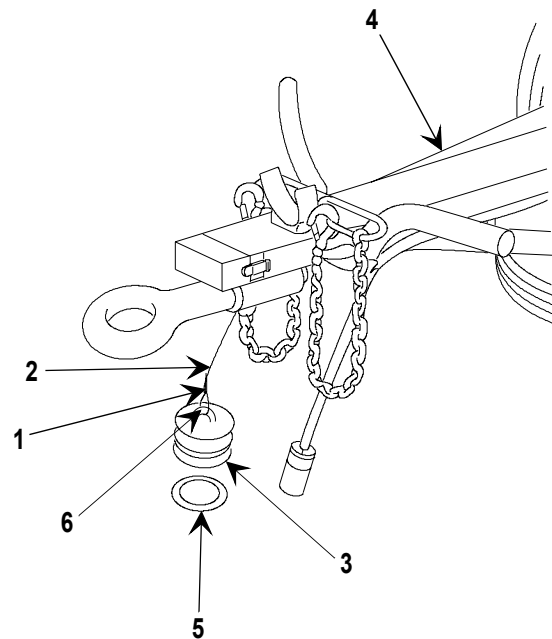
Muzzle plug assembly attached to trailer

Materials/Parts

GA grease (item 11, app D)
Jacketed wire rope MIL-W-83420
Preformed packing 12577318
Swaging sleeve MS51844-23 (2)

INSPECTION

- 1 Inspect the swaging sleeves (1) and jacketed wire rope (2) that attach the muzzle plug (3) to the trailer (4). If the rope is broken, replace it. If the total length of the rope is less than 12.00 in. (30.48 cm), replace it.
- 2 Inspect the muzzle plug (3) for corrosion and deformation. Remove corrosion. If the plug does not fit the barrel snugly, replace it.
- 3 Inspect the preformed packing (5) for pliability and cracks. If it is cracked or hard, replace it as authorized in Repair Parts and Special Tools List, appendix C.
- 4 Inspect chain hook (6). If damaged, replace as authorized in Repair Parts and Special Tools List, appendix C.



REPLACEMENT

- 1 Replace the muzzle plug (3) by cutting the jacketed wire rope (2) as close to the swaging sleeves (1) as possible. Install a new plug, and measure the length of the rope. If the rope is less than 12.00 in. (30.48 cm), install a new jacketed wire rope and swaging sleeves. If the rope is still longer than 12.00 in. (30.48 cm), install new swaging sleeves and lock with pliers. Install chain hook (6), if removed. Lock with pliers.
- 2 If removed, replace preformed packing (5). Lightly apply GA grease (item 11, app D) to a new packing and slide it onto the muzzle plug (3) until it seats into the groove on the plug.

2-19. PNEUMATIC TIRE WHEEL.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Reassembly

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

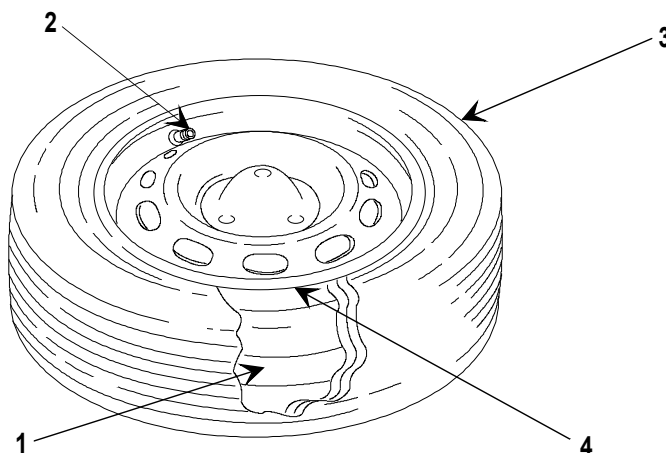
Equipment Condition

Pneumatic tire wheel removed
from trailer (TM 9-1015-250-10)

References

TM 9-1015-250-10
TM 9-2610-200-24

DISASSEMBLY



- 1 Release air pressure from inner tube (1). If possible, remove core of valve stem (2).
- 2 With valve stem side of wheel up, break bead of tire (3) away from rim of wheel (4).

CAUTION

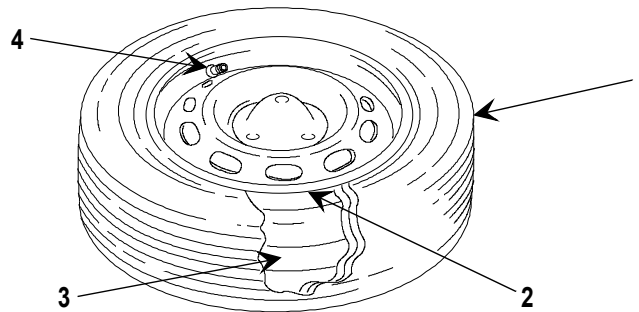
Do not pinch inner tube (1).

- 3 Using tire irons, carefully pry side of tire (3) over valve stem side of rim of wheel (4).
- 4 Remove inner tube (1).
- 5 Pry other side of tire (3) over valve stem side of rim of wheel (4).

INSPECTION/REPAIR

- 1 Using manual or electrical air pump, inflate inner tube to 10 psi (69 kPa).
- 2 Submerge inner tube in trough of soapy water or apply soapy water with a brush.
- 3 If bubbles form, inner tube leaks; refer to TM 9-2610-200-24 for repair. Replace it as authorized in Repair Parts and Special Tools List, appendix C.
- 4 Inspect inside and outside of tire for any punctures or sharp objects, especially at the location of inner tube leak.
- 5 Inspect tire. If tire has tears, refer to TM 9-2610-200-24 for repair. Replace it as authorized in Repair Parts and Special Tools List, appendix C.
- 6 Inspect wheel rim. If wheel rim is distorted, replace it as authorized in Repair Parts and Special Tools List, appendix C.

REASSEMBLY



- 1 Apply liberal amount of any kind of common liquid soap (i.e., dishwashing, hand) on both beads of tire (1).
- 2 With valve stem side of wheel (2) up, place tire (1) (with DOT serial number down) on rim.
- 3 Using tire irons, pry first side of tire (1) onto wheel (2).
- 4 Match valve stem of inner tube (3) to hole in wheel (2). Slide deflated inner tube into tire (1) over wheel rim. Pull valve stem through wheel into proper position. If removed, replace core of valve stem (4).
- 5 Work other side of tire (1) onto rim of wheel (2).
- 6 Holding valve stem out of wheel (2), inflate tire (1) to 10 psi (68 kPa) with pump. Bounce tire; make sure valve stem remains in proper position outside of wheel. Complete tire inflation to 32 psi (220 kPa).

2-20. TRAILER BRIDGE ASSEMBLY AND LOCK RELEASE LEVER.

This task covers:

- a. Removal
- b. Disassembly
- c. Inspection/Repair
- d. Reassembly
- e. Installation

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive
Tool Kit (SC 5180-90-CL-N26)

References

TM 9-1015-250-10

Materials/Parts

Adhesive (item 1, app D)
Cotter pin MS24665-287(2)
Cotter pin 93-24

Equipment Condition

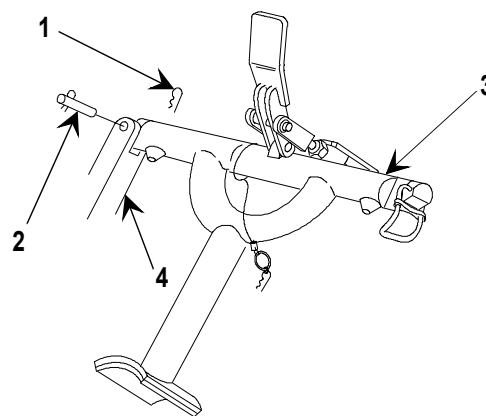
M120 mortar removed from trailer
(TM 9-1015-250-10)

REMOVAL

NOTE

Headless pin is secured with two cotter pins. It is necessary to remove only one cotter pin for removal of headless pin.

- 1 Remove one cotter pin (1) and headless pin (2) from trailer bridge assembly (3). Discard cotter pin.
- 2 Remove trailer bridge assembly (3) from trailer frame (4).



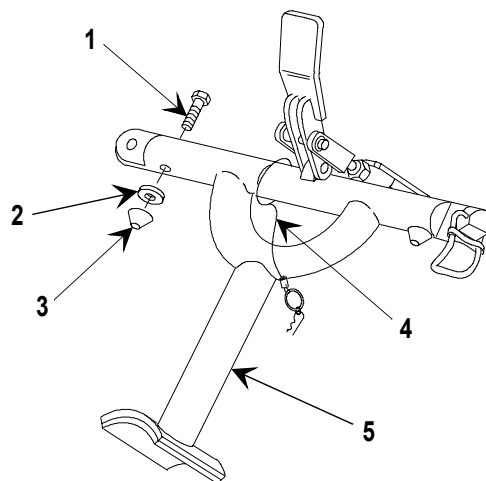
DISASSEMBLY

- 1 Using 6mm key wrench, remove two socket head capscrews (1), flat washers (2), and nonmetallic bumpers (3).

NOTE

Remove locking pin assembly (4) only if damaged or defective.

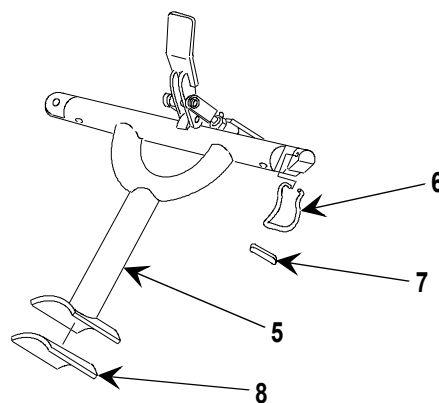
- 2 Remove locking pin assembly (4) by cutting ring from trailer bridge assembly (5).



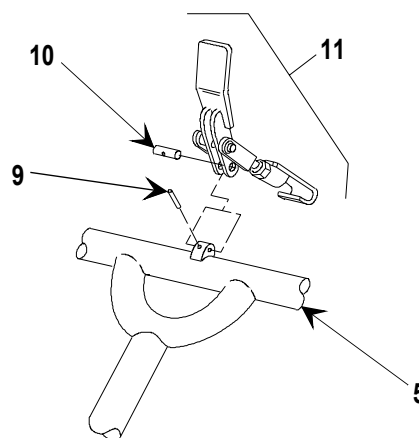
NOTE

Remove metal strip (6) and buckle (7) only if damaged or defective.

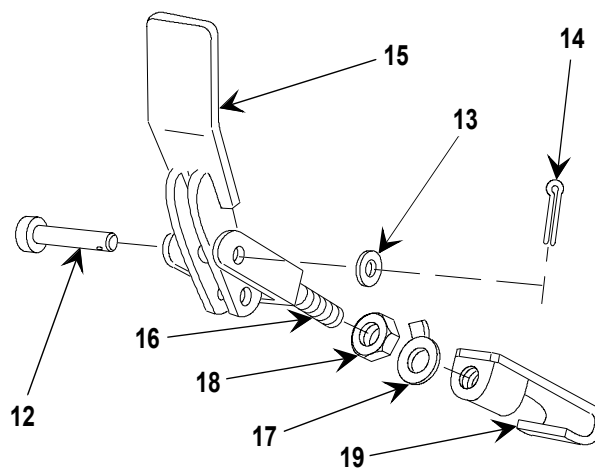
- 3 Remove metal strip (6) and buckle (7) from trailer bridge assembly (5).
- 4 If damaged, remove neoprene pad (8).



- 5 Remove headless straight pin (9) from headless straight pin (10) connecting lock release lever (11) to trailer bridge assembly (5).
- 6 Remove headless straight pin (10) to separate lock release lever (11) from trailer bridge assembly (5).



- 7 Remove plain headed pin (12) and flat washer (13) by removing cotter pin (14). Separate manual control lever (15) from rod end clevis (16). Discard cotter pin.
- 8 Bend tab on key washer (17) and loosen hexagon plain nut (18) and key washer. Separate hook (19) from rod end clevis (16).

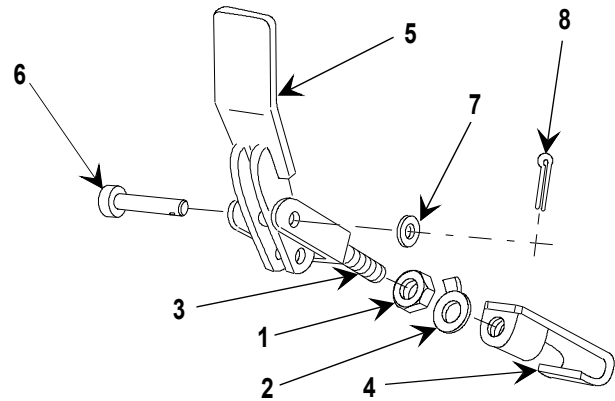
**INSPECTION/REPAIR**

Inspect for bends, corrosion, cracks, burrs, and wear. Replace any or all components damaged or defective as authorized by Repair Parts and Special Tools List, appendix C.

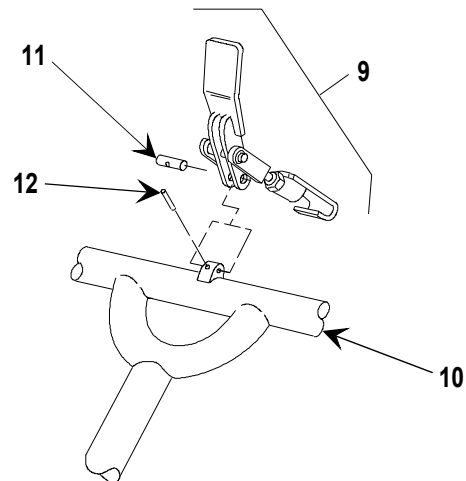
2-20. TRAILER BRIDGE ASSEMBLY AND LOCK RELEASE LEVER (Cont).

REASSEMBLY

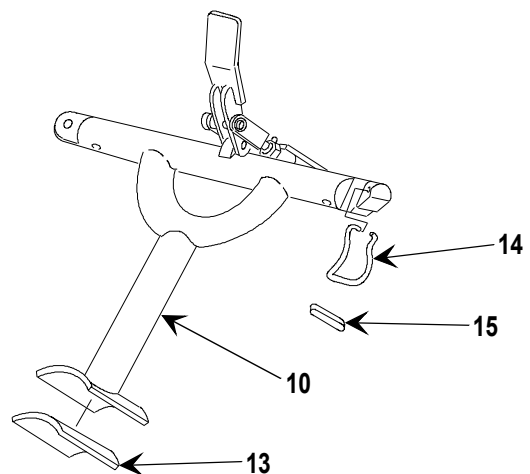
- 1 Install hexagon plain nut (1) and key washer (2) on rod end clevis (3). Join hook (4) and rod end clevis. Do not tighten hexagon plain nut or bend key washer.
- 2 Attach manual control lever (5) to rod end clevis (3) and secure with plain headed pin (6), flat washer (7), and new cotter pin (8).
- 3 Adjust hook (4) after weapon and M9 mortar baseplate are mounted on trailer. When adjusted, tighten hexagon plain nut (1) and bend key tab.



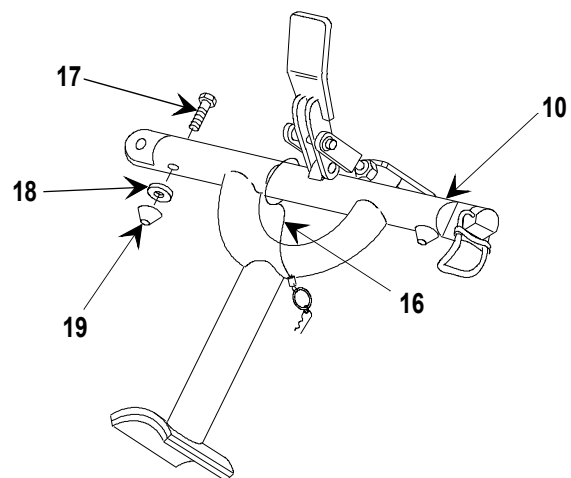
- 4 Install lock release lever (9) to trailer bridge assembly (10) with headless straight pin (11).
- 5 Install headless straight pin (12) to secure headless straight pin (11).



- 6 If removed, install new neoprene pad (13), using adhesive (item 1, app D).
- 7 If removed, install buckle (14) and new metal strip (15) on trailer bridge assembly (10).

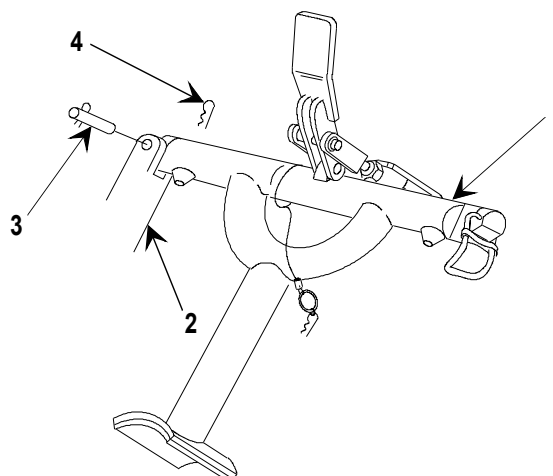


- 8 Attach locking pin assembly (16) to trailer bridge assembly (10).
- 9 Install two socket head capscrews (17), flat washers (18), and nonmetallic bumpers (19) to trailer bridge assembly (10). Secure capscrews using a 6mm key wrench.



INSTALLATION

Install trailer bridge assembly (1) to trailer frame (2) with headless pin (3) and new cotter pin (4).



2-21. TORSION BAR ASSEMBLY.

This task covers:

- a. Removal
- b. Disassembly
- c. Inspection/Repair
- d. Reassembly
- e. Replacement
- f. Lubrication

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

Lockwasher 93-137 (4)
Plain seal 12577321 (2)
Preformed packing 12577322 (2)
Preformed packing 12577373 (2)

Materials/Parts

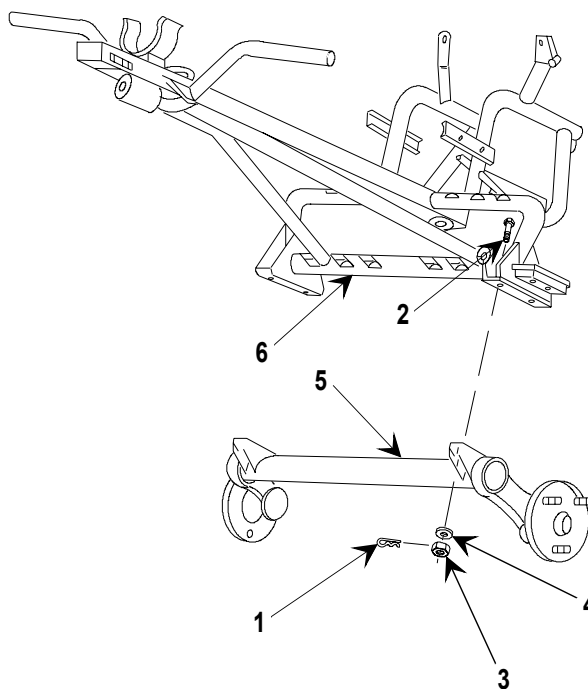
Abrasive cloth (item 8, app D)
Cotter pin MS24665-287 (4)
Cotter pin 93-1299 (2)
GA grease (item 11, app D)

Equipment Condition

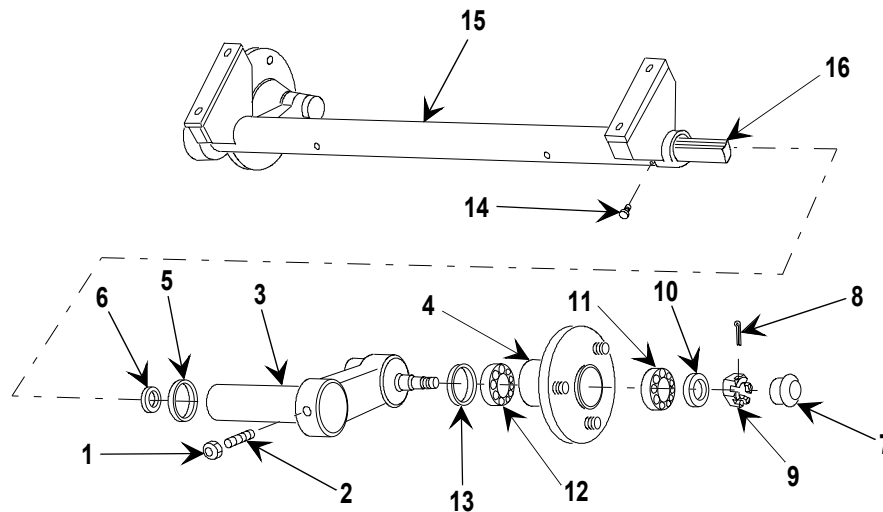
Pneumatic tire wheels removed
(TM 9-1015-250-10)

REMOVAL

- 1 Remove and discard four cotter pins (1) from four shoulder bolts (2).
- 2 Using 19mm socket wrench, remove four castellated nuts (3), lockwashers (4), and shoulder bolts (2) from torsion bar assembly (5). Separate torsion bar assembly from trailer frame (6). Discard lockwashers.



DISASSEMBLY



NOTE

The maintenance procedure is identical for both sides of torsion bar assembly. For illustration purposes, only the right hub assembly is disassembled.

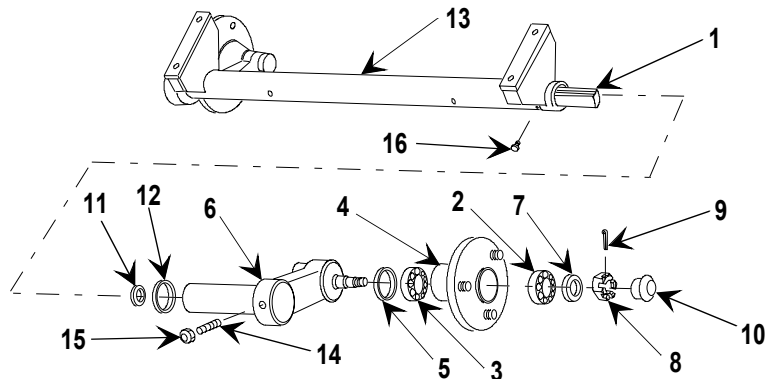
- 1 Using 22mm wrench, loosen hexagon plain nut (1). Remove setscrew (2) with nut. Withdraw arm assembly (3) with hub assembly (4) and remove preformed packings (5) and (6). Discard preformed packings.
- 2 Remove protective cap (7) and cotter pin (8). Remove castellated plain nut (9) and flat washer (10). Discard cotter pin.
- 3 Remove hub assembly (4) and thrust roller bearing (11). Remove thrust roller bearing (12). Remove and discard plain seal (13).
- 4 Using 8mm wrench, remove lubrication fittings (14) from torsion bar shaft assembly (15), if damaged.
- 5 If flat spring (16) is damaged, remove torsion load from spring (both sides) and drive flat spring out with hammer.

INSPECTION/REPAIR

- 1 Inspect for burrs and worn or damaged parts. Repair by removing burrs and by replacing defective parts per Repair Parts and Special Tools List, appendix C.
- 2 Check thrust roller bearings for smooth movement. Replace as authorized if bearings are corroded or do not rotate smoothly. Repack bearings with GA grease (item 11, app D). Recheck bearing movement after wheel is attached.
- 3 Replace torsion bar shaft assembly if deformed or badly corroded.

2-21. TORSION BAR ASSEMBLY (Cont).

REASSEMBLY



NOTE

The maintenance procedure is identical for both sides of torsion bar assembly. For illustration purposes, only the right hub assembly is reassembled.

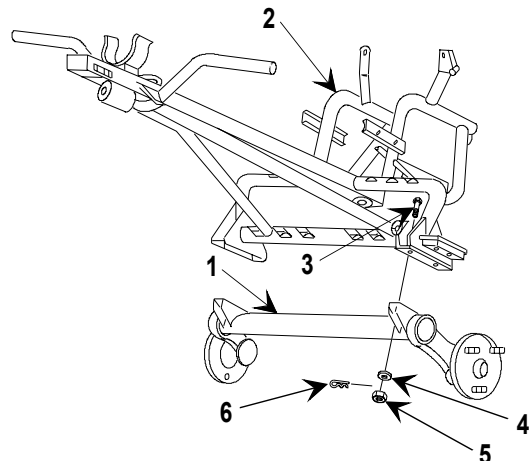
- 1 If removed, install new flat spring (1).
- 2 Install thrust roller bearings (2) and (3) into hub assembly (4). Check for free rotation in place. Install new plain seal (5).
- 3 Install hub assembly (4) onto arm assembly (6). Install flat washer (7) and castellated plain nut (8). Tighten nut to obtain correct bearing function. Secure with new cotter pin (9) and attach protective cap (10).
- 4 Install new preformed packings (11) and (12) into torsion bar shaft assembly (13).
- 5 Install assembled arm assembly (6) and hub assembly (4) onto torsion bar shaft assembly (13) and secure with setscrew (14) and hexagon plain nut (15).
- 6 If removed, install lubrication fittings (16) on torsion bar shaft (13) using 8mm wrench.

REPLACEMENT

Attach torsion bar assembly (1) to trailer frame (2) using four shoulder bolts (3), new lockwashers (4), castellated nuts (5), and new cotter pins (6). Secure castellated nuts using 19mm socket wrench.

LUBRICATION

Apply GA grease (item 11, app D) as required at any or all four lubrication fittings on torsion bar assembly.



2-22. ELECTRICAL WIRING ASSEMBLY.

This task covers:

- a. Removal
- b. Inspection/Repair
- c. Replacement

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

Materials/Parts

Lockwasher 93-30 (12)

References

TM 9-1015-250-10

Equipment Condition

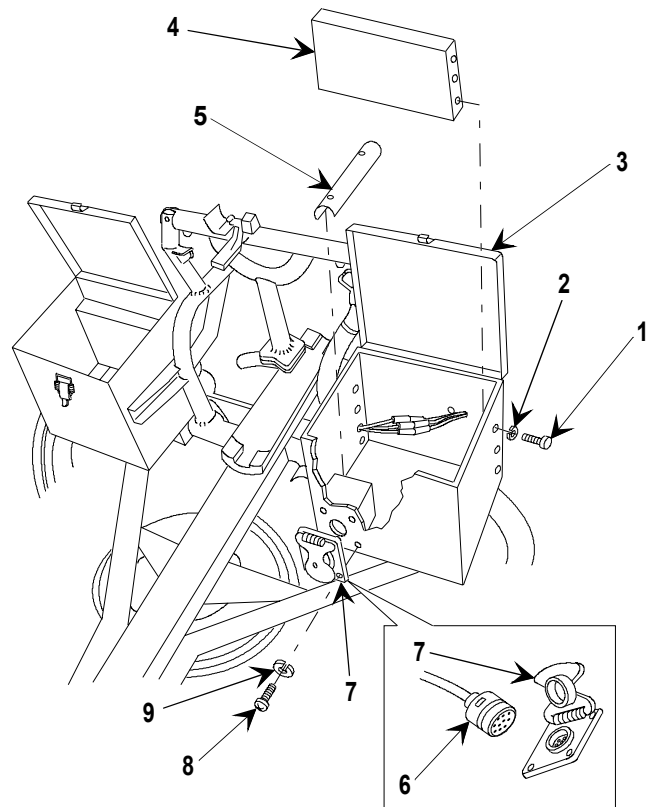
M120 mortar removed from
trailer (TM 9-1015-250-10)

REMOVAL

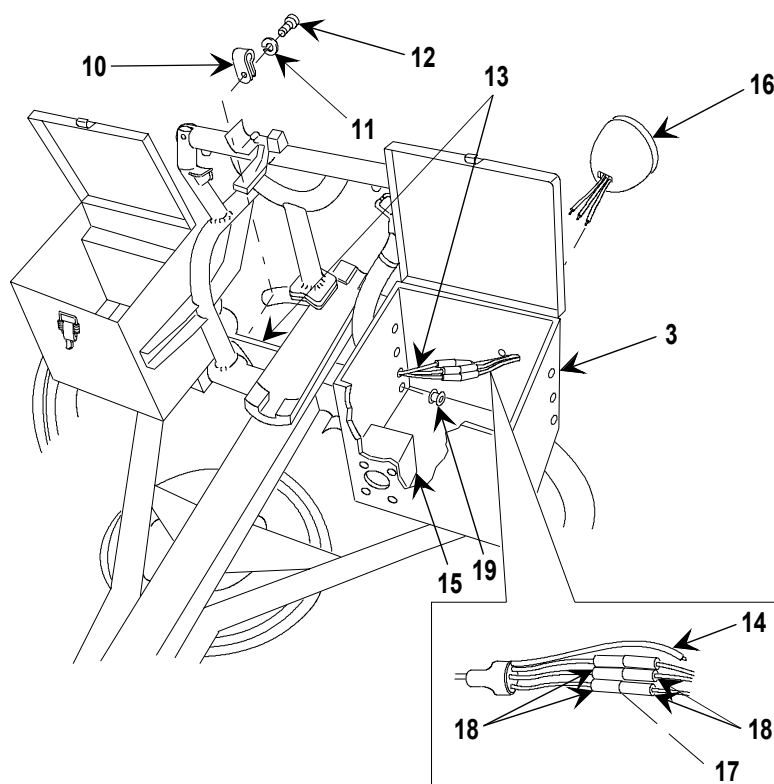
NOTE

Wiring harness must be disconnected from right accessories box before complete wiring harness can be removed from trailer. Refer to page 2-16 for disconnect procedure.

- 1 Remove six capscrews (1) and lockwashers (2) from left accessories box (3) using 10mm socket wrench. Lift out access covers (4) and (5). Discard lockwashers.
- 2 Disconnect cable assembly (6) from electrical cover (7).
- 3 Remove four machine screws (8), four lockwashers (9), and electrical cover (7) from left accessories box (3). Discard lockwashers.



2-22. ELECTRICAL WIRING ASSEMBLY (Cont).



- 4 Remove two loop clamps (10), lockwashers (11), and machine screws (12) from wiring harness (13). Discard lockwashers.
- 5 Disconnect grounding wire (14) inside left accessories box (3). Pull wiring harness (13) through the junction box (15) and left accessories box (3).
- 6 Refer to page 2-36 for stoplight-taillight assembly (16) removal and repair procedures.
- 7 If damaged, remove any or all slotted washers (17) and electrical connector shells (18) from wiring harness (13).
- 8 If damaged, remove nonmetallic grommet (19) from side of left accessories box (3).

INSPECTION/REPAIR

- 1 Inspect electrical wiring assembly for loose connections and frayed or cracked wiring.
- 2 Replace any damaged or defective part(s) as authorized by Repair Parts and Special Tools List, appendix C.
- 3 Inspect cable assembly for frayed or cracked wiring. If damaged, replace cable assembly.

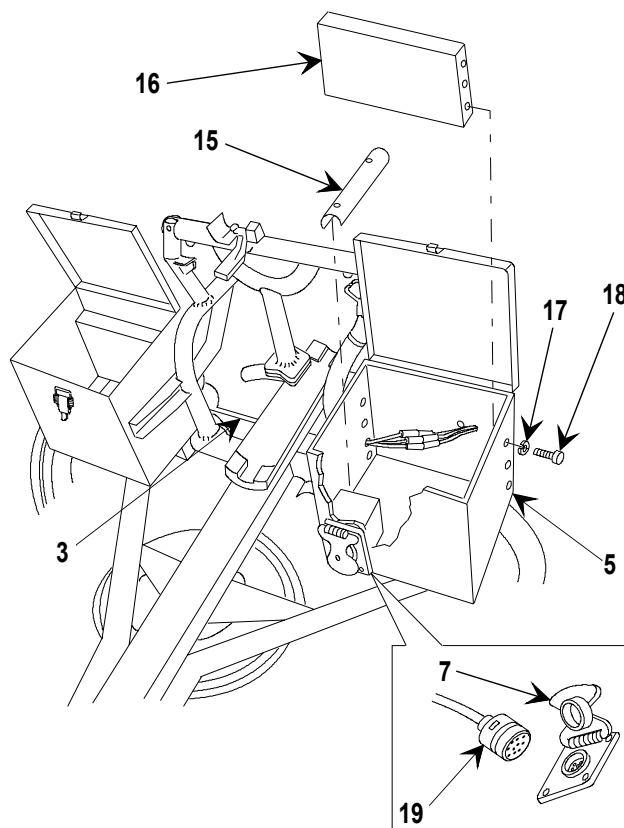
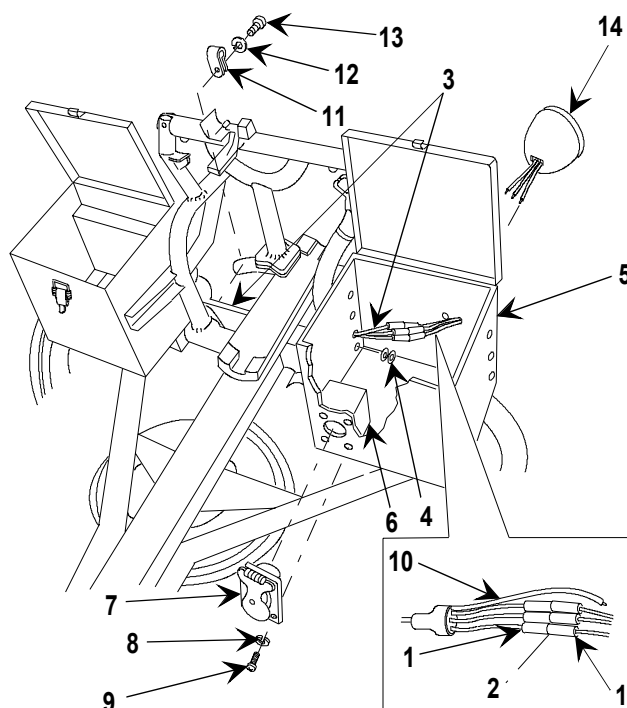
REPLACEMENT

- 1 If removed, install new electrical connector shells (1) and new slotted washers (2) as needed, to wiring harness (3).
- 2 If removed, install new nonmetallic grommet (4) to side of left accessories box (5).
- 3 Insert wiring harness (3) through front of left accessories box (5) and junction box (6).

NOTE

Ensure hinge of electrical cover and key of connector are on top.

- 4 Secure electrical cover (7) to left accessories box (5) using four new lockwashers (8) and machine screws (9). Connect grounding wire (10) to left accessories box.
- 5 Push wiring harness (3) out the side of left accessories box (5) and secure to axle with two loop clamps (11), new lockwashers (12), and machine screws (13).
- 6 Refer to page 2-36 for replacement procedures for stoplight-taillight assembly (14), if previously removed.
- 7 Connect wiring harness (3) to stoplight-taillight assembly (14).
- 8 Replace access cover (15) and secure access cover (16) in place using six new lockwashers (17) and capscrews (18). Tighten capscrews using 10mm socket wrench.
- 9 Refer to page 2-16 for replacement and connection of wiring harness (3) to right accessories box.
- 10 Connect cable assembly (19) to electrical cover (7).



2-23. STOPLIGHT-TAILLIGHT ASSEMBLY.

This task covers:

- | | |
|----------------------|-----------------|
| a. Removal | d. Reassembly |
| b. Disassembly | e. Installation |
| c. Inspection/Repair | f. Test |

INITIAL SETUP

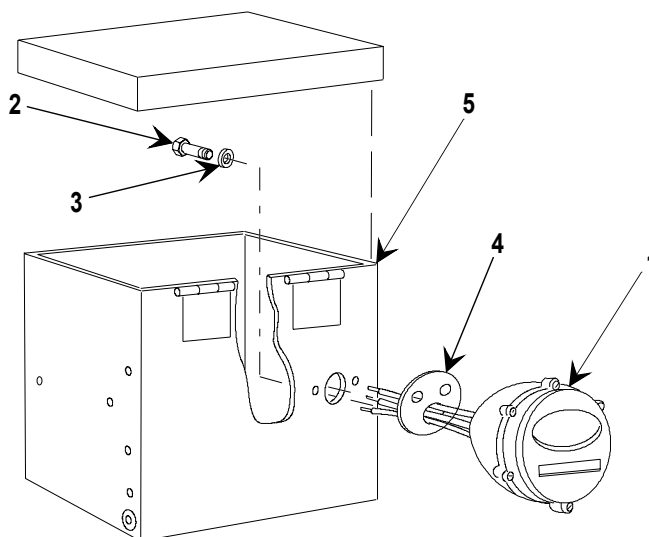
Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

Materials/Parts

Gasket 12577315 (2)
Lockwasher MS35338-42 (4)
Preformed packing MS51329-4 (2)

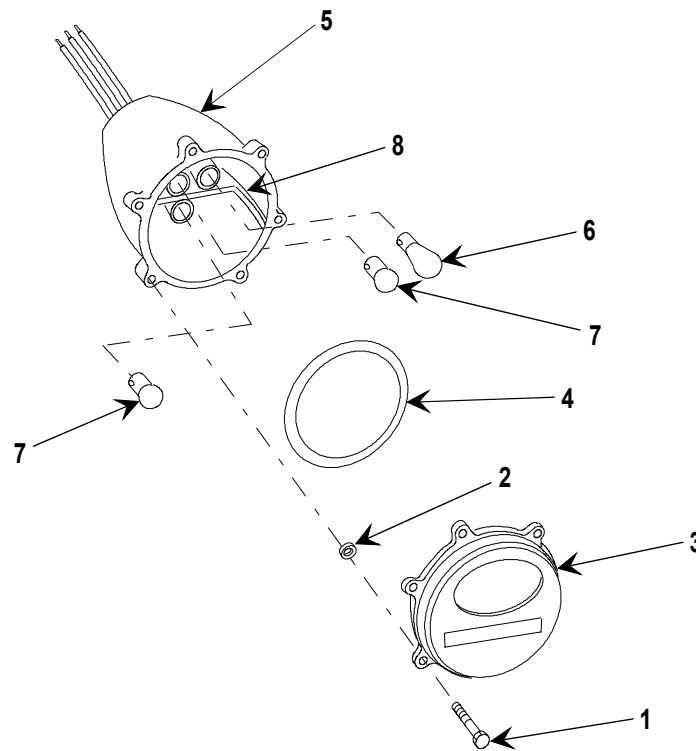
REMOVAL



NOTE

- Removal of stoplight-tailight assembly is the same for both accessories boxes. For purpose of illustration, only the right stoplight-tailight assembly is removed.
- If replacing incandescent lamps only, do not remove stoplight-tailight assembly from accessories box. Proceed directly to step 1 in disassembly instructions.

- 1 Disconnect grounding wires. Disconnect wiring harness from stoplight-tailight assembly (1).
- 2 Remove two machine screws (2) and lockwashers (3). Separate stoplight-tailight assembly (1) and gasket (4) from accessories box (5).

DISASSEMBLY

- 1 Remove six screws (1) and flat washers (2). Remove light lens cap (3) and preformed packing (4) from taillight housing body (5).
- 2 Remove any or all incandescent lamps (6) and/or (7) from socket assembly (8) as necessary.

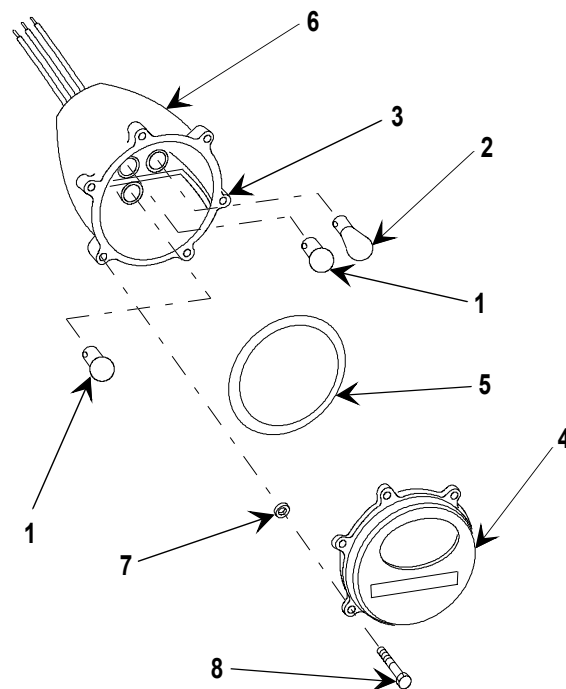
INSPECTION/REPAIR

- 1 Inspect stoplight-taillight assembly for damage, corrosion, and frayed wiring.
- 2 Replace any damaged components or assemblies as authorized by Repair Parts and Special Tools List, appendix C.

2-23. STOPLIGHT-TAILLIGHT ASSEMBLY (Cont).

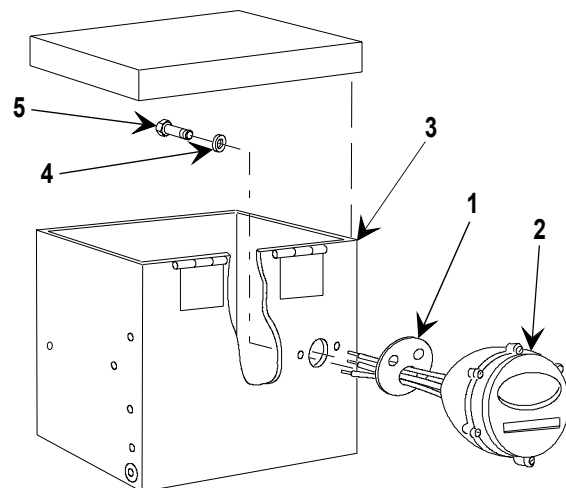
REASSEMBLY

- 1 Insert any or all new incandescent lamps (1) and/or (2) into socket assembly (3). Do not overtighten incandescent lamps.
- 2 Attach light lens cap (4) and new preformed packing (5) to taillight housing body (6) using six flat washers (7) and screws (8).



INSTALLATION

- 1 Attach new gasket (1) and stoplight-tailight assembly (2) to accessories box (3) using two new lockwashers (4) and machine screws (5).
- 2 Connect wiring harness to stoplight-tailight assembly (1). Connect grounding wires.



TEST

Before returning to service, check stoplight-tailight assembly for proper operation and ensure lamps are in working order.

2-24. SAFETY CHAIN ASSEMBLY.

This task covers:

a. Inspection

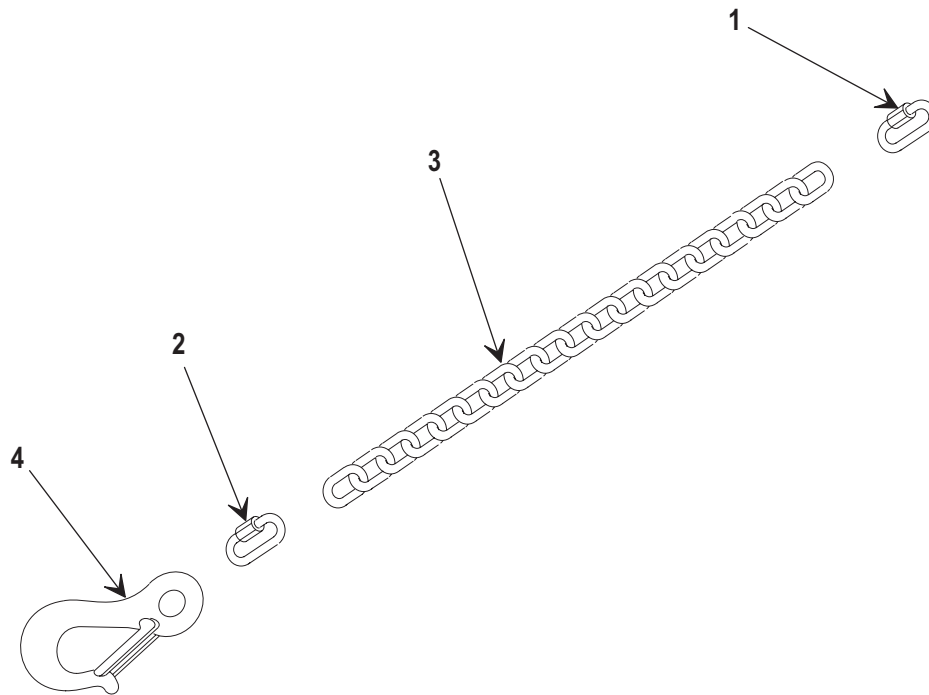
b. Replacement

INITIAL SETUP

Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

INSPECTION



1 Inspect for physical damage, deformation, corrosion, and cracks.

2 Inspect detaching chain links (1 and 2), chain (3), and hoist hook (4) for proper functioning.

REPLACEMENT

Replace any defective item(s) as authorized by Repair Parts and Special Tools List, appendix C.

2-25. DRIVER'S VISION DEVICE.

This task covers:

- a. Inspection/Replacement
- b. Disassembly
- c. Reassembly

INITIAL SETUP

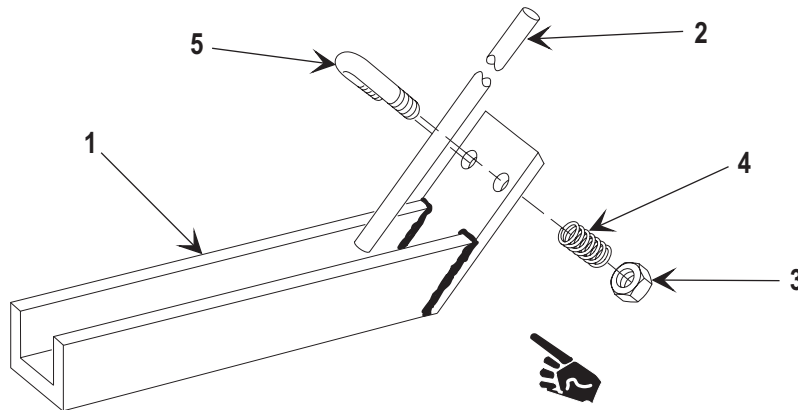
Tools/Special Tools

General Mechanic's Automotive Tool
Kit (SC 5180-90-CL-N26)

Materials/Parts

Self-locking hex nut MS21083-C4 (2)

INSPECTION/REPLACEMENT



- 1 Inspect weldment (1) for cracks, breaks, and other obvious damage.
- 2 Check for any missing or damaged items.
- 3 Replace any defective item(s) as authorized by Repair Parts and Special Tools List, appendix C.

DISASSEMBLY

Remove flag shaft (2), two self-locking hex nuts (3), and two compression springs (4). Remove U-bolt (5) from weldment (1). Discard self-locking hex nuts.

REASSEMBLY

Install U-bolt (5) to weldment (1) using two compression springs (4) and two new self-locking hex nuts (3). Do not overtighten nuts. Install flag shaft (2).

2-26. BLAST ATTENUATOR ASSEMBLY AND CONE ASSEMBLY.

This task covers:

- | | |
|----------------|---------------|
| a. Inspection | c. Repair |
| b. Disassembly | d. Reassembly |

INITIAL SETUP

Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

Materials/Parts

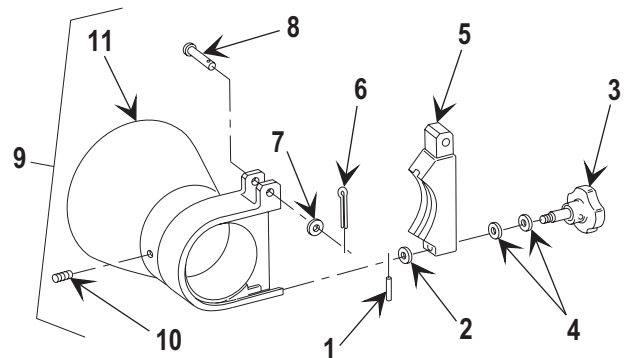
Abrasive cloth (item 8, app D)
Cotter pin DIN94-3.2X18-ST-B5A
Thread-locking compound (item 25, app D)

INSPECTION

- 1 Inspect blast attenuator assembly for loose, missing, or damaged parts.
- 2 Inspect blast attenuator assembly for cracks, gouges, or other external damage.

DISASSEMBLY

- 1 Remove headless straight pin (1), flat washer (2), handle (3), and two spring tension washers (4) from locking (5).
- 2 Remove cotter pin (6) and flat washer (7) from headed straight pin (8).
- 3 Remove headed straight pin (8) and locking (5) from cone assembly (9).
- 4 If damaged, remove setscrew (10) from cone (11).

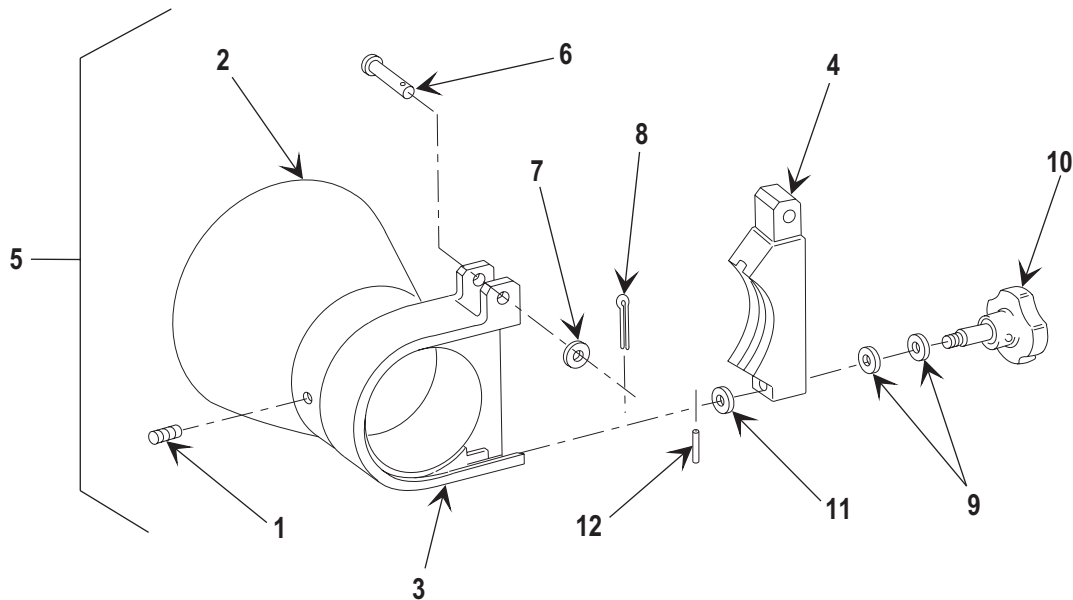


2-26. BLAST ATTENUATOR ASSEMBLY AND CONE ASSEMBLY (Cont).

REPAIR

- 1 Inspect the disassembled parts for burrs, corrosion, and worn or damaged parts.
- 2 Repair by removing burrs and any corrosion using abrasive cloth (item 9, app D). Replace defective parts as authorized by the Repair Parts and Special Tools List, appendix C.

REASSEMBLY



- 1 If setscrew was removed, apply thread-locking compound (item 25, app D) to threads of new setscrew (1). Ensure that cone (2) is secure in collar (3) and install setscrew.
- 2 Install locking (4) to cone assembly (5) and secure with headed straight pin (6), flat washer (7), and new cotter pin (8).
- 3 Install two spring tension washers (9) and handle (10) on locking (4). Insert flat washer (11) and headless straight pin (12) onto end of handle.

2-27. ARTILLERY CLEANING STAFF ASSEMBLY.

This task covers:

- a. Disassembly
- b. Repair
- c. Reassembly

INITIAL SETUP

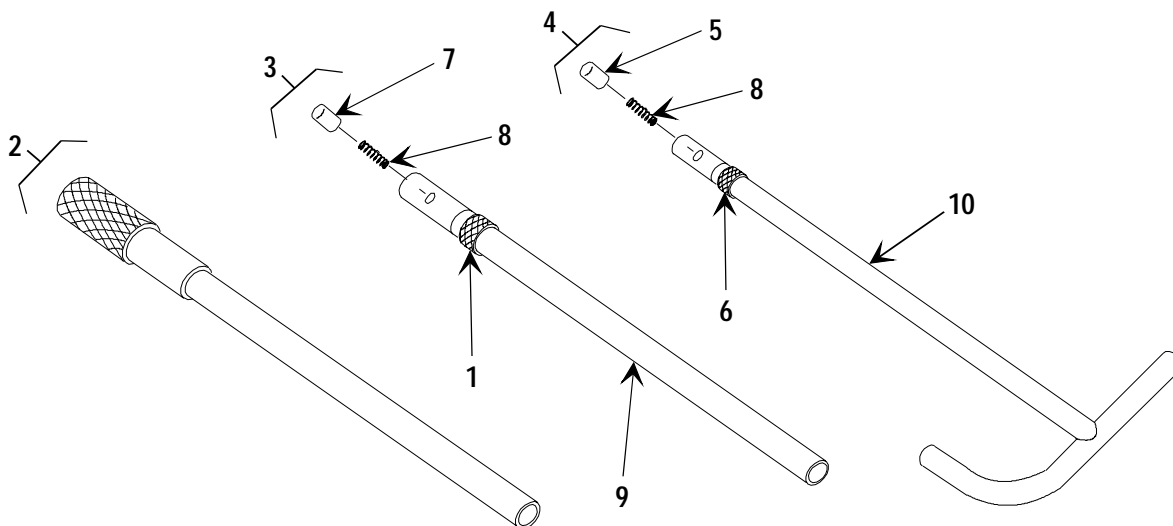
Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

Materials/Parts

Thread locking compound (item 25, app D)

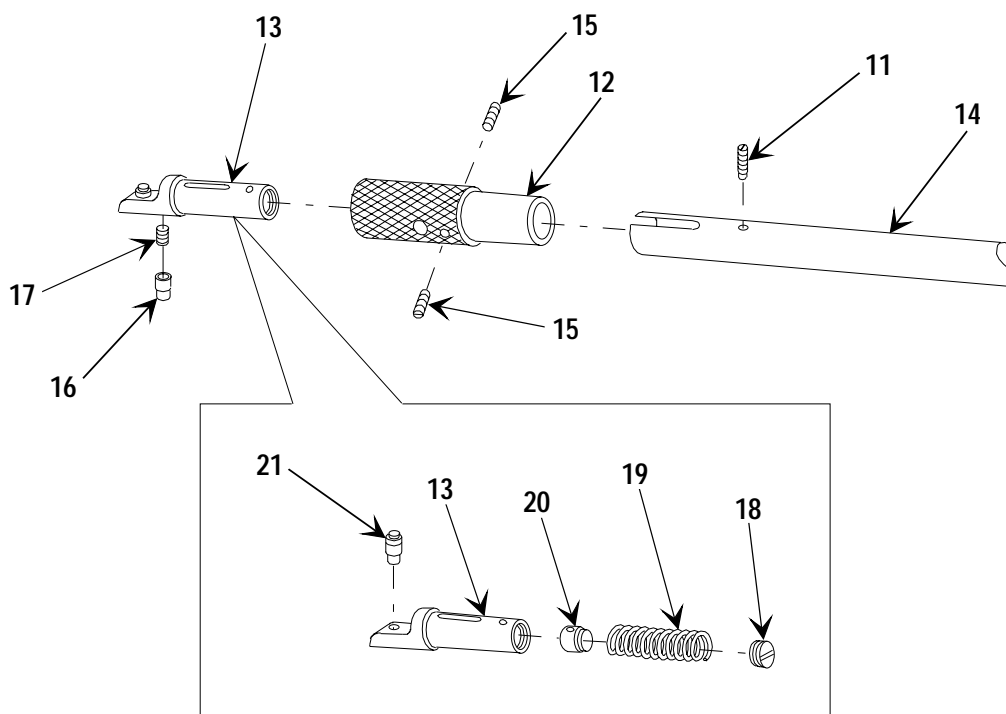
DISASSEMBLY



- 1 Unscrew sleeve (1) and separate bottom staff section (2) from center staff section (3) and manual control handle (4). If damaged, remove sleeve.
- 2 Depress spring cap (5). Unscrew sleeve (6) and separate center staff section (3) from manual control handle (4).
- 3 Remove spring caps (7) and (5) and helical springs (8) from center staff section tube (9) and manual control handle tube (10).

2-27. ARTILLERY CLEANING STAFF ASSEMBLY (Cont).

DISASSEMBLY (Cont)

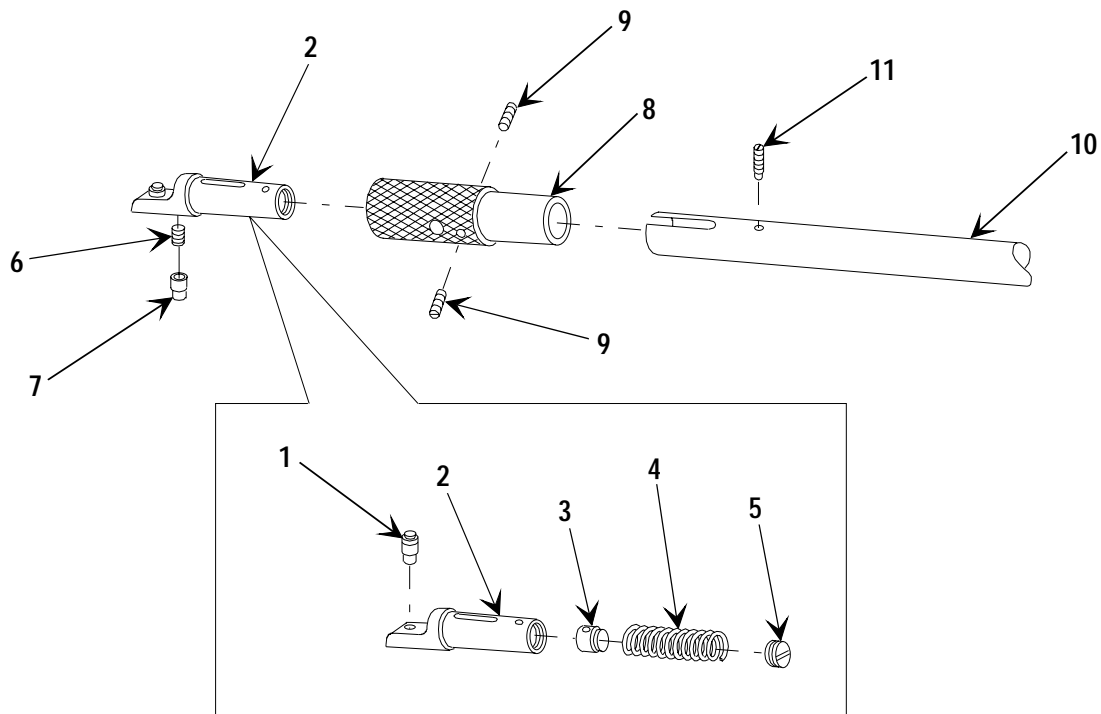


- 4 Remove machine screw (11) and separate sleeve (12) and connecting link (13) from bottom staff section tube (14).
- 5 Remove two machine screws (15). Depress spring cap (16) and separate sleeve (12) and connecting link (13). Remove spring cap and helical spring (17) from connecting link.
- 6 Mark relative positions of setscrew (18) and connecting link (13) to ensure identical reassembly. Remove setscrew, helical spring (19), and plain barrel nut (20) from connecting link. Remove externally relieved body bolt (21) from connecting link.

REPAIR

Replace any defective item(s) as authorized by Repair Parts and Special Tools List, appendix C.

REASSEMBLY



- 1 Apply thread locking compound (item 25, app D) to externally relieved body bolt (1) and install into connecting link (2). Install plain barrel nut (3), helical spring (4), and setscrew (5) into connecting link.

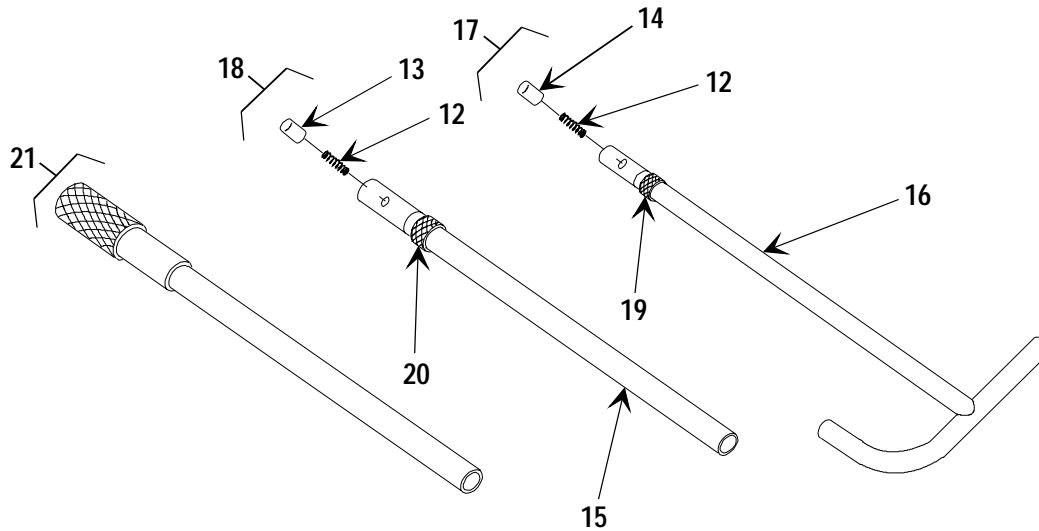
NOTE

Ensure holes in plain barrel nut (3) are aligned with slot in connecting link (2). Ensure holes in setscrew (5) and connecting link are aligned.

- 2 Install helical spring (6) and spring cap (7) into connecting link (2).
- 3 Insert connecting link (2) into sleeve (8) and secure with two machine screws (9).
- 4 Insert connecting link (2) and sleeve (8) into bottom staff section tube (10). Ensure holes in connecting link and tube are aligned. Secure with machine screw (11).

2-27. ARTILLERY CLEANING STAFF ASSEMBLY (Cont).

REASSEMBLY (Cont)



- 5 Install helical springs (12) and spring caps (13) and (14) into center staff section tube (15) and manual control handle tube (16).
- 6 Depress spring cap (14) on manual control handle (17) and insert into center staff section (18). Tighten sleeve (19).
- 7 Depress spring cap (13) on center staff section (18). Replace sleeve (20) if removed. Insert into bottom staff section (21). Tighten sleeve.

2-28. CARTRIDGE EXTRACTOR.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Reassembly
- d. Test

INITIAL SETUP

Tools/Special Tools

Small Arms Repairman Tool Kit
(SC 5180-95-CL-A07)

References

TM 9-1015-250-10

Materials/Parts

Abrasive cloth (item 8, app D)
Cotter pin 93-162 (4)
Straight pin 93-208 (2)

DISASSEMBLY

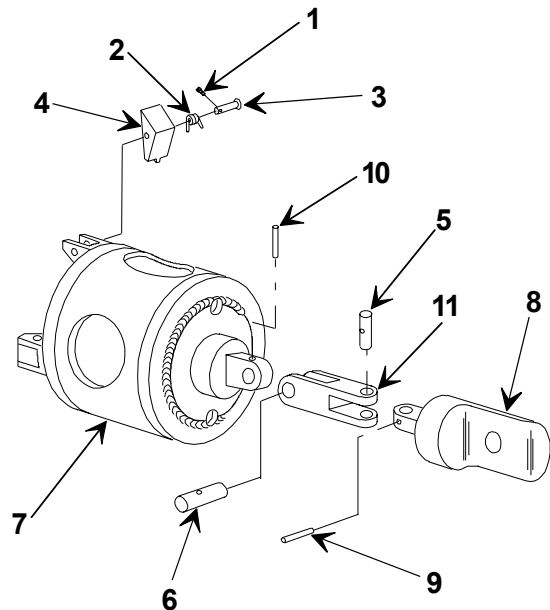
WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

CAUTION

Suddenly released helical torsion springs may cause lost parts.

- 1 Using pliers, remove cotter pin (1) and discard. Carefully release helical torsion spring (2) by removing headed straight pin (3). Remove helical torsion spring and extractor catch (4). Repeat for other extractor catches.



CAUTION

Parts were drilled for straight pins when they were assembled. To line up holes for pins, parts must be put back exactly as they were assembled. Mark before disassembly. See general maintenance instructions.

- 2 Mark the position of headless straight pins (5) and (6) to the extractor body (7) and rod end connector (8). Carefully remove straight pins (9) and (10), using punch and hammer. Discard straight pins. Remove headless straight pins, releasing rod end connector and rigid connecting plug (11).

2-28. CARTRIDGE EXTRACTOR (Cont).

INSPECTION/REPAIR

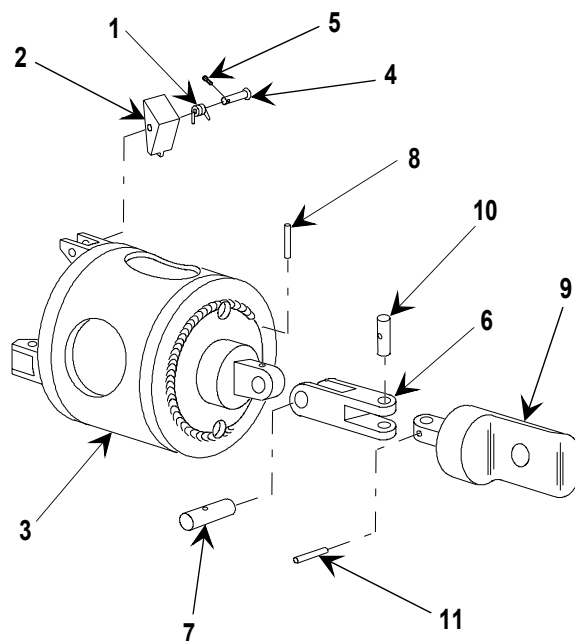
- 1 Inspect for burrs, worn parts, and corrosion. Repair by smoothing burrs, removing corrosion, or replacing parts as authorized by Repair Parts and Special Tools List, appendix C.
- 2 Carefully inspect the extractor catch for any wear on the end that grasps the cartridge. If there are any broken edges on the part of the catch that goes into the cartridge, replace the catch as authorized in Repair Parts and Special Tools List, appendix C.

REASSEMBLY

WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

- 1 Put helical torsion spring (1) into extractor catch (2) and position both into extractor body (3). Install headed straight pin (4) and new cotter pin (5). Repeat for other extractor catches.
- 2 Position rigid connecting plug (6) onto extractor body (3) and insert headless straight pin (7) so hole in headless straight pin aligns with hole in extractor body. Insert new straight pin (8) to secure extractor body and headless straight pin.
- 3 Insert rod end connector (9) into rigid connecting plug (6) and insert headless straight pin (10) so hole in headless straight pin aligns with hole in rod end connector. Insert new straight pin (11) into rod end connector and headless straight pin.



TEST

- 1 The rod end connector and rigid connecting plug should allow free 90 degree bends in four directions.
- 2 The extractor catches must snap positively into original position after being retracted and released.
- 3 Cartridge extractor must fully engage and secure cartridges until released. Test with Battalion Training Aid (see TM 9-1015-250-10).

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

2-29. INTERMEDIATE STORAGE. Store the weapon under cover, in open sheds, or warehouses, whenever possible, and prepare it for storage as follows:

a. Preparation. Remove components and disassemble weapon prior to cleaning and packaging.

WARNING

Dry cleaning solvent is highly flammable. Do not clean parts near an open flame or in a smoking area. Make sure adequate ventilation is available. Wear safety glasses, splash goggles, and protective gloves. Always know location of nearest eye wash station.

b. Cleaning and Drying. Clean the weapon, including the bore, with dry cleaning solvent (item 20, app D). Wipe dry using wiping rags (item 18, app D).

c. Preservation. Coat the cannon bore liberally with GPL lubricating oil (item 12, app D). Coat the other painted and unpainted surfaces of the cannon and mount assembly with GA grease (item 11, app D).

d. Packaging.

(1) Wrap the M298 120mm cannon, mortar mount, and trailer separately in barrier material (item 3, app D) and close securely with 2 in. tape (item 22, app D).

(2) Preserve and wrap the BII and other small items in cushioning material (item 9, app D) and place in fiberboard boxes. Close with 2 in. tape (item 21, app D).

(3) Enclose a copy of DA Form 2408-4, Weapons Record Data and, when applicable. DA Form 2408-9, Equipment Control Record, in a plastic bag and secure to the wrapped M298 120mm cannon with tape.

(4) Include the following information on the inside packaging list:

NATIONAL STOCK NUMBER
PART NUMBER
FEDERAL ITEM NAME
WEIGHT AND CUBE
SERIAL NUMBER

e. Marking. Mark shipping container with the following information:

DESTINATION
WEIGHT AND CUBE

2-29. INTERMEDIATE STORAGE (Cont).

f. Preparation for Shipment of Small Component Items.

(1) If a small breakable component such as a sight unit is the only item being shipped, use fast pack containers. These are available in a wide range of sizes through the GSA catalog.

(2) If the small item is durable metal, apply GPL lubricating oil (item 12, app D) and wrap in barrier material (item 3, app D). Cushion the item and place in a fiberboard box of appropriate size.

g. Additional Instructions. See TB 9-1000-247-34 for further instructions and equipment requirements.

CHAPTER 3

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; TOOLS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

- 3-1. **COMMON TOOLS AND EQUIPMENT.** For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.
- 3-2. **SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.** Special tools are listed in the Repair Parts and Special Tools List, appendix C.
- 3-3. **REPAIR PARTS.** Repair parts are listed and illustrated in the Repair Parts and Special Tools List, appendix C.

Section II. DIRECT SUPPORT TROUBLESHOOTING

3-4. **GENERAL.**

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the 120mm mortar. Each malfunction for an individual component unit or system is followed by a list of test/inspections which will help you to determine the corrective actions to take. You should perform the test/inspections and corrective actions in the order listed.

NOTE

Refer to TM 9-1000-202-14, Evaluation of Cannon Tubes, for borescope and pullover gaging requirements.

b. This manual cannot list all malfunctions that may occur, nor all test/inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, see individual repair section for maintenance instructions on each major assembly.

3-5. **TROUBLESHOOTING PROCEDURES.** Refer to troubleshooting table for malfunctions, test or inspections, and corrective actions. The malfunction index is provided for a quick reference of malfunctions covered in the table.

MALFUNCTION INDEX

	Troubleshooting Procedure Page
M298 120MM CANNON	
M298 120mm cannon jumps out of M9 mortar baseplate when firing.....	3-2
Cartridge fails to slide down M298 120mm cannon	3-2
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DIRECT SUPPORT TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

M298 120MM CANNON

1. M298 120MM CANNON JUMPS OUT OF M9 MORTAR BASEPLATE WHEN FIRING.

Inspect breech cap ball. It must not be severely dented.

Replace M298 120mm cannon (p 3-6).

2. CARTRIDGE FAILS TO SLIDE DOWN M298 120MM CANNON.

Inspect cannon tube bore.

Step 1. Clean cannon tube with borebrush assembly per TM 9-1015-250-10.

Step 2. Replace the M298 120mm cannon (p 3-6). Inspect cannon tube per TM 9-1000-202-14.

M190/M191 MORTAR MOUNT

3. BUFFER MECHANISM DOES NOT FUNCTION OR HANGS OUT OF BATTERY.

Step 1. With both hands, pull buffer housing assembly sharply to the rear and release. Repeat three times. Buffer mechanism should retract completely.

If buffer mechanism fails to retract completely, go to step 2.

Step 2. Disassemble and inspect for broken/failed helical compression spring or bent internal wrenching bolt. Inspect for excess grease.

Replace damaged parts. Remove excess grease (p 3-30).

DIRECT SUPPORT TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

Step 3. Disassemble and inspect for curved or damaged internal wrenching bolts, sleeve bushings, or mechanical drive housings.

Replace faulty components (p 3-30).

4. DIFFICULTY IN TRAVERSING WEAPON.

Step 1. Check for lubrication.

Clean and lubricate traversing gear assembly.

Step 2. Disassemble traversing gear assembly. Inspect all parts for damage.

Replace faulty components (p 3-40).

5. BACKLASH IN TRAVERSING GEAR ASSEMBLY EXCEEDS 1/8 TURN.

Adjust backlash in traversing gear assembly (p 3-40).

6. DIFFICULTY IN ELEVATING WEAPON.

Step 1. Check for lubrication.

Clean and lubricate elevating mechanism.

Step 2. Disassemble elevating mechanism. Inspect all parts for damage.

Assemble and repair (p 3-8).

7. BACKLASH IN ELEVATING MECHANISM EXCEEDS 1/8 TURN.

Adjust backlash in elevating mechanism (p 3-8).

8. DIFFICULTY IN ROTATING TRAVERSING EXTENSION ASSEMBLY.

Inspect for worn operating parts.

Replace worn parts (p 3-44).

DIRECT SUPPORT TROUBLESHOOTING (Cont)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

9. DIFFICULTY IN CROSS-LEVELING WEAPON.

Step 1. Check for lubrication.

Clean and lubricate cross leveling mechanism.

Step 2. Disassemble cross leveling mechanism. Inspect all parts for damage.

Assemble and repair (p 3-26).

10. BACKLASH IN CROSS LEVELING MECHANISM EXCEEDS 1/8 TURN.

Adjust backlash in cross leveling mechanism (p 3-26).

Section III. DIRECT SUPPORT MAINTENANCE PROCEDURES

3-6. GENERAL MAINTENANCE INSTRUCTIONS.

a. General. Much of the direct support maintenance of the 120mm mortar addresses removal and replacement of pins (straight, tapered, or spring) and setscrews. Become familiar with the following general instructions, cautions, and warnings pertaining to their removal and replacement before performing maintenance tasks.

b. Pins. Pins are very important to the maintenance of the 120mm mortar. Many of the pins (tapered, straight, or spring) are difficult to remove so as to prevent unauthorized actions by lower maintenance levels. Unauthorized pin removal can cause damage to the weapon system. Become familiar with the following general maintenance instructions, cautions, and warnings when working with any of these pin types.

(1) Make sure all holes align before inserting any pin. If all holes are aligned, pin should not be difficult to insert into position.

(2) Do not force any pin. Too much force can damage the pin or cause it to flatten out prematurely. If the pin is not fully inserted, it will not function correctly.

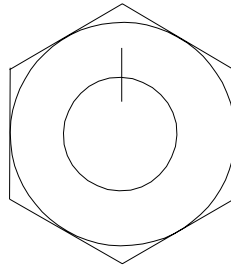
(3) Spring pins are under pressure. Be careful when removing any spring pin.

(4) Straight or tapered pins can be hidden from view by paint finish. Look closely and if necessary, remove finish to locate straight pin. Touch up paint after installation to prevent any corrosion.

(5) Identify the large and small ends when removing tapered pins. Drive the pin out from the smaller end. If the pin must be drilled out, drill from the smaller end as well.

(6) When driving out grooved pins, treat as tapered pins. Drive pins out from the opposite side of larger and/or grooved end.

(7) Before removing any pin, mark how the parts are aligned. (Keep parts and pins that are removed together as a matched set.)



MARKED

(8) Mark only the parts that are pin attached. Start in the center of the pin and mark as shown above. Only one line is needed.

(9) Straight, tapered, grooved, and spring pins should not be reused unless otherwise noted.

c. Setscrews. Setscrews are widely used on the 120mm mortar and serve two basic purposes.

(1) To protect the mortar from vibration when being fired or transported.

(2) To allow for certain weapon system adjustments. Refer to the following maintenance instructions before beginning any maintenance tasks involving setscrews.

(a) When setscrews are used to secure parts from vibration, mark the location before disassembly.

(b) When setscrews are used to hold or make adjustments, there is no need to mark locations before disassembly.

NOTE

Before any new setscrew hole is drilled, ensure setscrew will be accessible for all reassembly/disassembly actions and will not restrict intended movement of other assemblies.

d. Drills, Taps, and Reamers. There are numerous drilling, tapping, and reaming procedures throughout the direct support maintenance tasks. Before performing any of these tasks, become familiar with the handling and use of drills, taps, and reamers. Refer to TM 9-243 for detailed instructions when using any of these tools.

e. Special Warnings and Cautions. Refer to the following warnings and cautions before beginning any maintenance task involving drilling or tapping procedures.

3-6. GENERAL MAINTENANCE INSTRUCTIONS (Cont).

WARNING

Flying metal chips may cause injury to you or other workers nearby. Any time metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

CAUTION

- Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.
- Parts were drilled and reamed for tapered pins when they were assembled. To line up holes in proper order, parts must be put back exactly as they were assembled. Mark before disassembly. See general maintenance instructions.
- Prior to assembly, parts drilled or tapped must be cleaned of all metal filings or chips.

f. Semiannual Service Procedure.

NOTE

- For maintenance tracking purposes ONLY, a bipod serial number can be stamped on the bottom side of buffer housing.
- For semiannual service, use Direct Support Semiannual Parts Kit, NSN 1015-01-452-9634.

M190/M191 mortar mount will be disassembled to a level allowing each part's complete cleaning, inspection for repair, and lubrication. Equipment is not ready if mount's operational effectiveness is reduced by any repairable deficiency.

3-7. M298 120MM CANNON.

This task covers:

a. Inspection

b. Replacement

INITIAL SETUP

Tools/Special Tools

Accessory Outfit for Pullover Gages
 Borescope, Cannon Bore Inspecting,
 M3
 Gage, firing pin, 12901151
 Removal tool, breech cap, 12901153
 Small Arms Shop Set: Field Maintenance, Basic, Less Power
 (SC 4933 95-CL-A11)
 Wrench, firing pin, 12901194

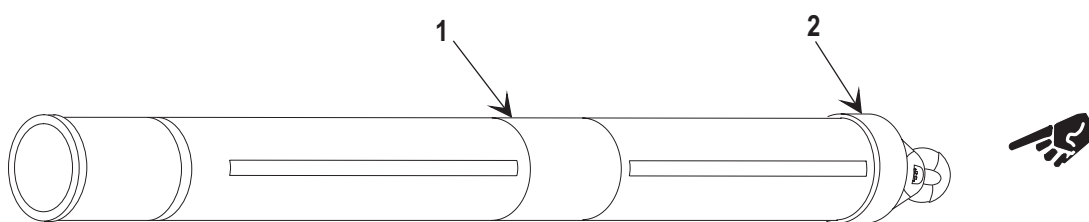
References

DA Form 2408-4
 TM 9-1000-202-14
 TM 9-1015-250-10
 TM 9-6650-235-13&P

Equipment Condition

M298 120mm cannon removed from
 M190/M191 mortar mount
 (TM 9-1015-250-10)

INSPECTION



NOTE

For removal of firing pin, refer to TM 9-1015-250-10.

- 1 Inspect M298 120mm cannon (1) for wear, dents, fouling, and corrosion.
- 2 Inspect breech assembly (2) for signs of gas leakage (visible discoloration) around the cannon tube.
- 3 Inspect to ensure that firing pin aligns with white line on barrel and is tight at assembly.
- 4 Inspect firing pin for proper operation and firing pin protrusion.
- 5 Borescope and use pullover gage on cannon tube according to instructions in TM 9-1000-202-14. Refer to TM 9-6650-235-13&P for borescope operation. Record readings on DA Form 2408-4.
- 6 Determine if bore meets or exceeds condemnation limit of 4.761 in. (120.929 mm).

REPLACEMENT

If cannon tube meets or exceeds condemnation limits, replace M298 120mm cannon as authorized by Repair Parts and Special Tools List, appendix C.

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Lubrication
- d. Reassembly
- e. Test

INITIAL SETUP

Tools/Special Tools

Block, depth, 12901137
Drill, 3mm, ANSI-B94.11M
Drill, 4mm, ANSI-B94.11M
Guide, drill, 12901136
Guide, drill, 12944228
Guide, drill, 12944229
Guide, drill, 12944230
Guide, drill, 12944231
Guide, drill, 12944232
Guide, drill, 12944233
Guide, drill, 12944234
Jaws, 40mm, 12577339
Reamer, hand, 6mm, 12901131
Semiannual Service Direct Support
Parts Kit, 5911365
Small Arms Shop Set: Field Maintenance, Basic, Less Power (SC 4933-95-CL-A11)
Tap, 4mm, ANSI-B-94.9
Tap, 5mm, ANSI-B-94.9
Tap, 6mm, ANSI-B-94.9-1987
Wrench, 16mm, 73-208, ANSI-B107.9
Wrench, 24mm, ANSI-B107.9
Wrench, hook, 52/55, 12577463
Wrench, hook, 58/62, 12577464
Wrench, key, 2mm, B18.3.2M
Wrench, key, 2.5mm, ANSI-B18.3.2M

Wrench, key, 3mm, ANSI-B18.3.2M
Wrench, spanner, adjustable, 12576998
Wrench, spanner, WS-89, 12577344
Wrench, spanner, WS-93, 12577346

Materials/Parts

Abrasive cloth (item 8, app D)
Adhesive (item 1, app D)
GA grease (item 11, app D)
GPL lubricating oil (item 12, app D)
Grooved pin, DIN D63464/7-06050
Preformed packing, 12577319
Pressure sensitive adhesive tape (item 21, app D)
Spring pin, DIN1481-3X18-B2D (2)
Spring pin, 93-597
Thread locking compound (item 25, app D)

References

TM 9-1015-250-10

Equipment Condition

M190/M191 mortar mount removed from M1100 120mm mortar trailer or M1064 carrier (TM 9-1015-250-10)

DISASSEMBLY

WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

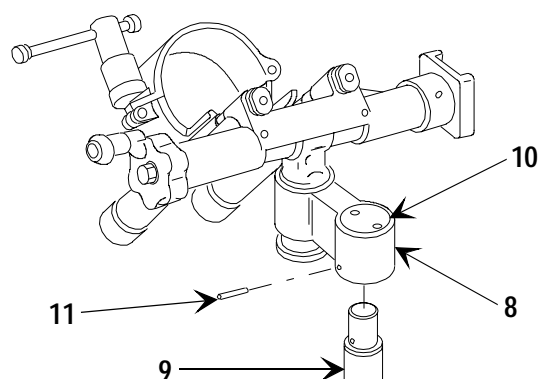
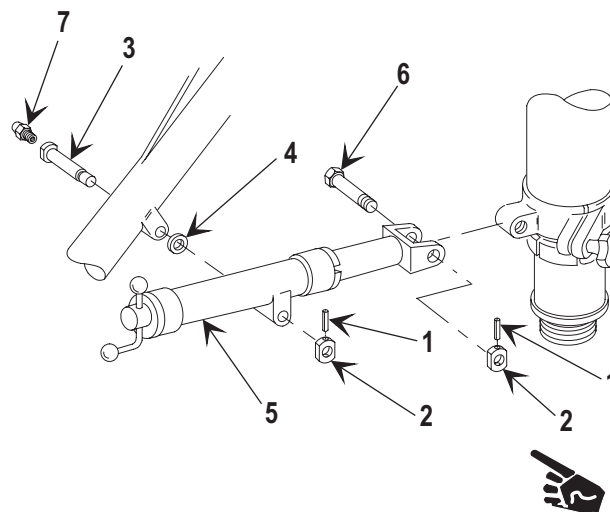
CAUTION

Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.

NOTE

Only the M190 configuration is shown. Location of cross leveling mechanism and attaching parts on M191 is similar (see page 2-3).

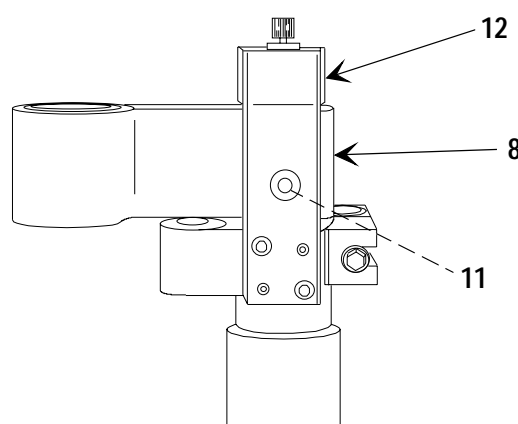
- 1 Using punch, remove two spring pins (1) from two nuts (2). Discard spring pins. Unscrew and remove nuts using 16mm wrench and adjustable wrench. Withdraw pivot shaft (3) and remove flat washer (4), holding cross leveling mechanism (5). Withdraw shoulder bolt (6) and remove cross leveling mechanism. If damaged, remove lubrication fitting (7) from pivot shaft.
- 2 Mark relative position of traversing extension housing (8), inner elevating sleeve (9), and machine bushing (10). Place punch at visible end of grooved pin (11). Drive out and discard grooved pin.

**NOTE**

If grooved pin (11) cannot be driven out using punch, remove traversing extension housing from traversing extension assembly (see p 3-44) and perform step 3. If grooved pin can be driven out using punch, proceed to step 4.

CAUTION

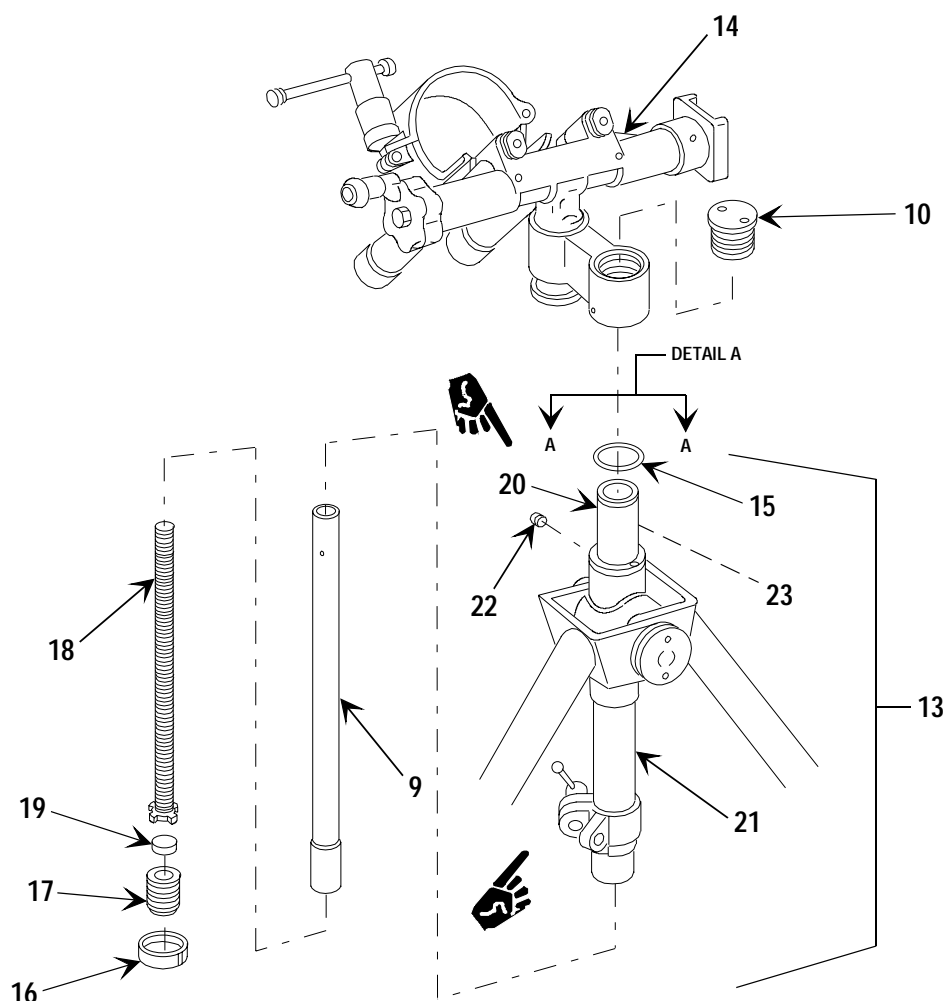
Ensure that bushing lines up with grooved pin (11) to prevent damage to equipment.

**NOTE**

The gage that is included with drill guide #12901136 (12) should not be installed in drill guide during drilling.

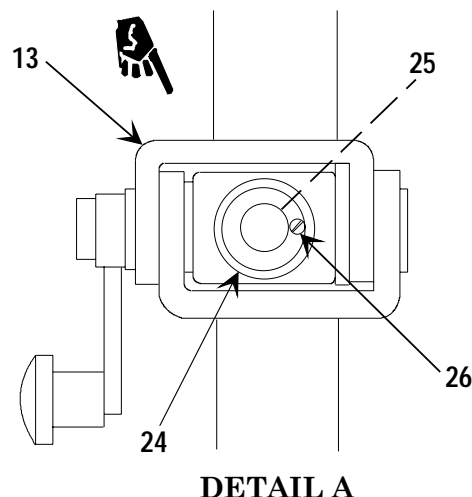
- 3 Install drill guide (12) onto traversing extension housing (8), lining up bushing with grooved pin (11). Use 13/64-in. drill and drill through grooved pin. Drive out remaining portion of grooved pin using punch.

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont). DISASSEMBLY (Cont)



- 4 Unscrew and remove machine bushing (10) with adjustable spanner wrench. Remove elevating mechanism (13) from traversing extension and traversing gear assemblies (14). Remove and discard preformed packing (15).
- 5 Using 52/55 hook wrench, release round nut (16). Unscrew machine plug (17) using WS-93 spanner wrench. Push inner elevating sleeve (9), together with elevating screw (18) and thrust washer bearing (19), through the bottom opening of the elevating mechanism (13). Separate inner elevating sleeve, elevating screw, and thrust washer bearing.
- 6 Mark relative positions of mechanical drive housing (20) and main elevating housing (21) to ensure identical reassembly. Remove setscrew (22), using 2.5mm key wrench. Using 58/62 hook wrench, remove mechanical drive housing.
- 7 Remove and inspect preformed felt (23) for serviceability. Ensure sufficient grease is present to prevent water entry into main elevating housing (21).

- 8 Looking down into elevating mechanism (13), mark relative position of bevel gear (24) to outer elevating sleeve (25) and remove setscrew (26) using 2mm key wrench.

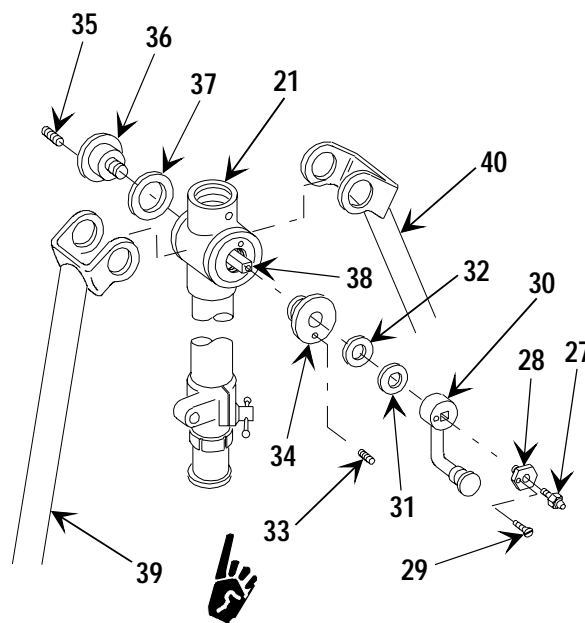


- 9 Lay mortar mount on workbench with hand crank up. Insert WS-89 spanner wrench into the bottom of the main elevating housing (21) until it is seated. Turning the wrench turns the hand crank. Lodge the handle of the wrench, or a pipe extension attached to the wrench, against the right leg of the mortar mount (the leg without the bracket for the cross leveling mechanism).
- 10 Holding the wrench against the mortar mount leg, tap the hand crank firmly clockwise with a plastic hammer until the crank turns freely. Continue turning crank by hand until there is no pressure on the wrench braced against the mortar mount leg.

- 11 If damaged, remove lubrication fitting (27) from machine screw (28). Mark relative position of screw (29) in machine screw and hand crank (30). Remove screw. Unscrew machine screw with 24mm wrench and remove hand crank, spring washer (31), and flat washer (32). Notice orientation of spring washer for reassembly (concave down) and discard if damaged.

NOTE

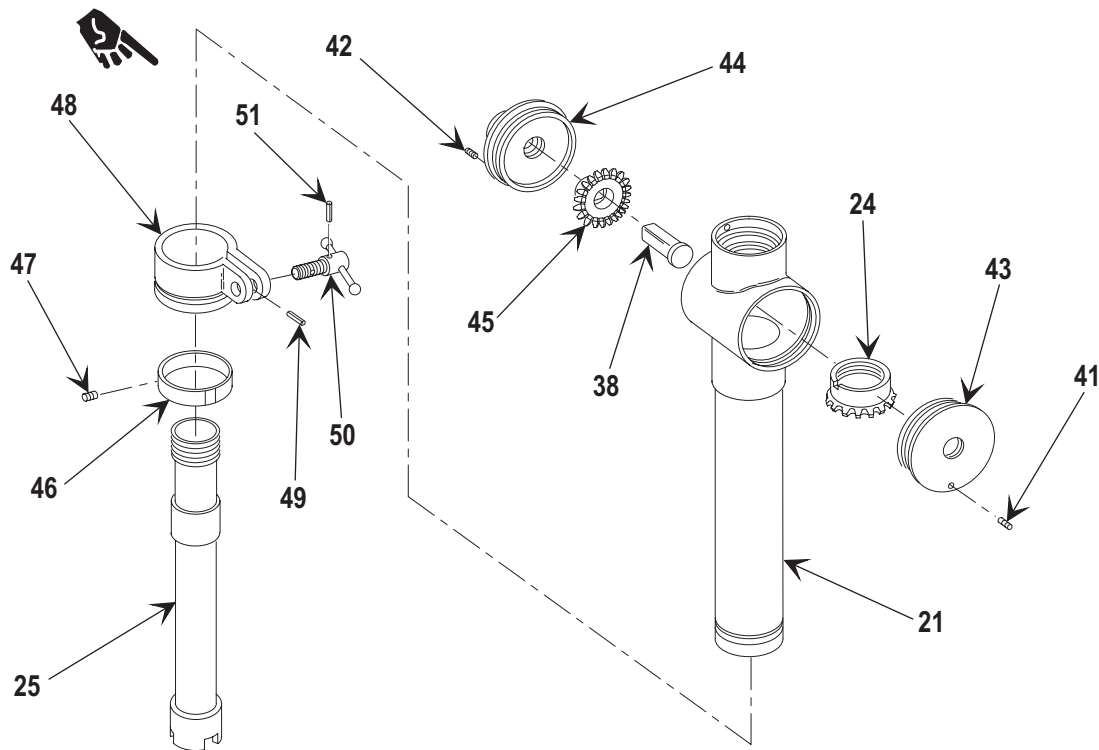
To aid in reassembly, note position of setscrew hole.



- 12 Remove setscrew (33) with 2.5mm key wrench. Unscrew and remove machine bushing (34) using adjustable spanner wrench.
- 13 Remove setscrew (35) using 3mm key wrench. Unscrew and remove protective plug (36) using adjustable spanner wrench. Remove flat washer (37) by sliding it out from between mortar mount legs. Notice positions of flat washer and each leg to main elevating housing.
- 14 Push sleeve nut (38) into housing and remove left and right mortar mount legs (39 and 40), left leg (39) first.

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

DISASSEMBLY (Cont)



- 15 Mark relative positions of setscrews (41 and 42) in mechanical drive housings (43 and 44) to main elevating housing (21). Using 2.5mm key wrench, remove setscrews. Using adjustable spanner wrench, remove mechanical drive housings. Remove bevel gear (45) together with sleeve nut (38).
- 16 Unscrew outer elevating sleeve (25) and pull it down to stop. Remove bevel gear (24).
- 17 Push upwards and remove outer elevating sleeve (25) through the top opening of main elevating housing (21).
- 18 Mark relative position of round nut (46) and main elevating housing (21). Using 2.5mm key wrench, release setscrew (47). Unscrew and remove round nut, using 58/62 hook wrench. Loosen and slide off loop clamp (48).

WARNING

**Flying metal chips may cause injury to you or other workers nearby.
Anytime metal strikes metal (hammer, punch, or pin), chips may fly.
Protect others with screens. Wear eye protection and be careful.**

- 19 Using punch, drive out spring pin (49) and remove handle assembly (50). Discard spring pin.
- 20 If damaged, drive out grooved pin (51) from handle assembly (50). Discard grooved pin.

INSPECTION/REPAIR

- 1 Inspect for physical damage, burrs, cracks, deformation, and corrosion. Remove burrs and corrosion using abrasive cloth (item 8, app D). Replace defective parts as authorized in Repair Parts and Special Tools List, appendix C.
- 2 Inspect for free movement of outer elevating sleeve in main elevating housing.
- 3 Inspect for free movement of inner elevating sleeve in outer elevating sleeve.
- 4 Inspect for free movement of elevating screw in inner elevating sleeve.
- 5 For repair of major assemblies of mortar mount, refer to pages 3-25 through 3-44.

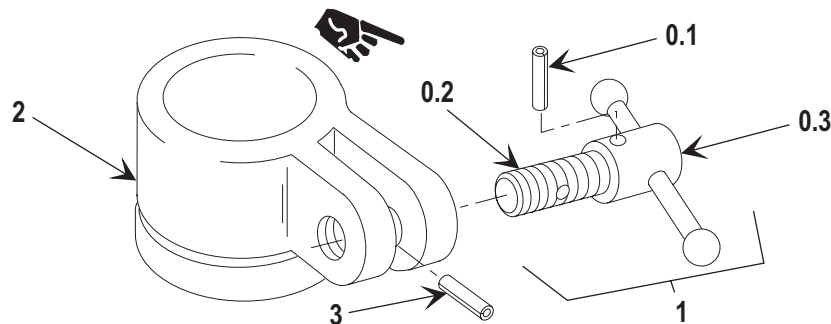
LUBRICATION

Coat threads of shaft of pivot shaft, shaft of shoulder bolt, elevating screw, thrust washer bearing, bevel gears, and mechanical drive housings with GA grease (item 11, app D). Apply a light coat of GPL (item 12, app D) to all unpainted surfaces.

REASSEMBLY

NOTE

M190/M191 mortar mounts have slightly different loop clamp designs but are assembled similarly. See Repair Parts and Special Tools List, Appendix C.



WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

- 0.1** If removed, install new grooved pin (0.1) to assemble bolt (0.2) and bushing (0.3) of handle assembly (1).
- 1** Install handle assembly (1) on loop clamp (2) and secure with new spring pin (3).

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont)

REASSEMBLY (Cont)

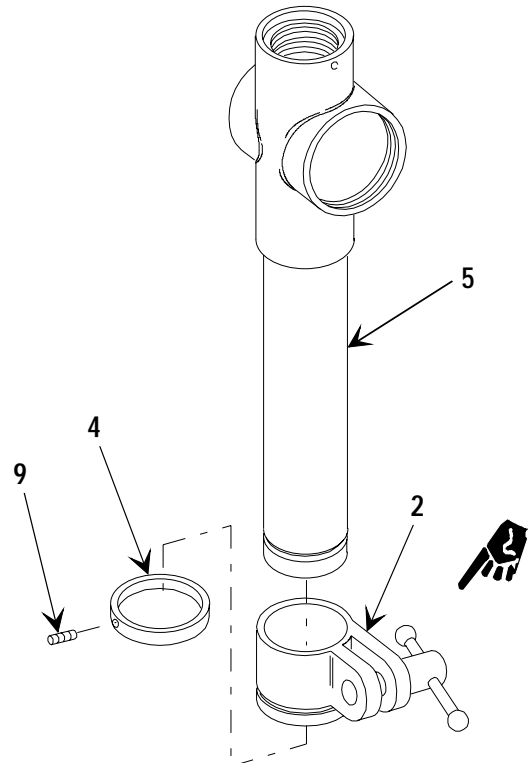
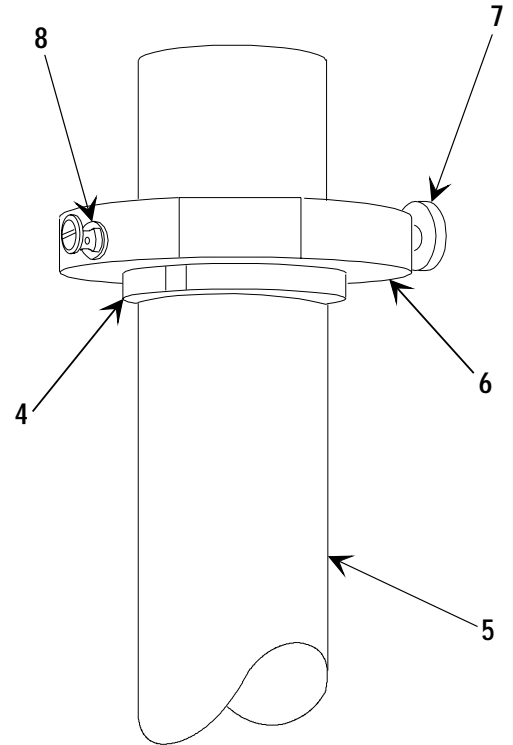
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

If round nut (4) or main elevating housing (5) is new, perform steps 2 through 8. If installing previously matched component parts, proceed to step 9.

- 2 Screw on round nut (4) to stop.
- 3 Place open side of drill guide #12944230 (6) over round nut (4). Secure drill guide by tightening locking head screw (7).
- 4 Install 9/64-in. bushing (8) into drill guide.
- 5 Set the depth of 9/64-in. drill using depth block and tape. Drill to exact depth.
- 6 Remove 9/64-in. bushing and install #19 drill bushing.
- 7 Set the depth of #19 drill using depth block and tape. Drill to exact depth.
- 8 Remove drill guide (6) and tap a 5mm hole to depth. Remove round nut (4).
- 9 Slide loop clamp (2) onto main elevating housing (5). Screw on round nut (4) with 58/62 hook wrench to assembled position. Apply thread locking compound (item 25, app D) to setscrew (9) and secure using 2.5mm key wrench.

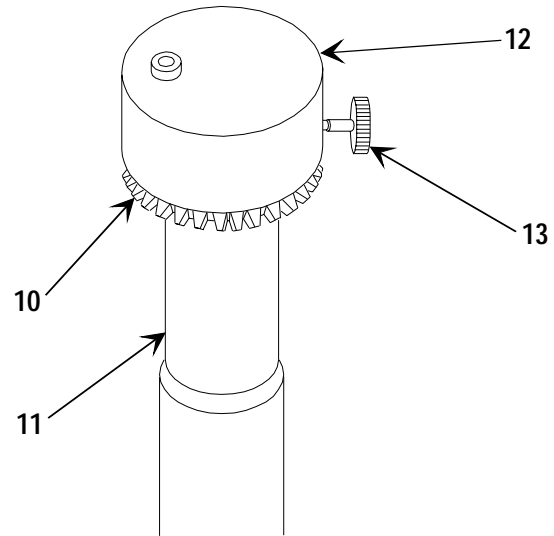


WARNING

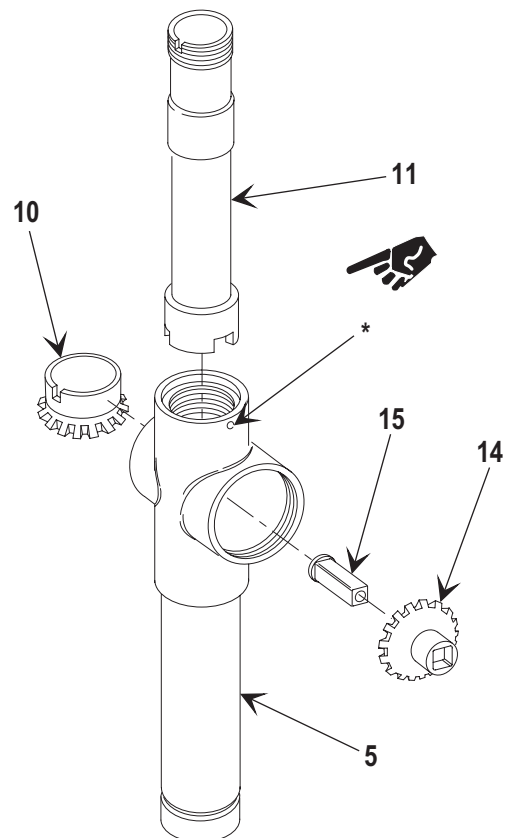
Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

If bevel gear (10) or outer elevating sleeve (11) is new, perform steps 10 through 12. If installing previously matched component parts, proceed to step 13.



- 10** Thread bevel gear (10) onto outer elevating sleeve (11) by hand as tight as possible.
- 11** Place drill guide #12944228 (19) on bevel gear (10) and tighten locking head screw (13).
- 12** Set the depth of #30 drill using depth block and tape. Drill to exact depth. Remove drill guide (12) and tap a 4mm thread 0.25 in. (0.64 cm) deep. Mark relative position of bevel gear (10) to outer elevating sleeve (11). Remove bevel gear.
- 13** Insert outer elevating sleeve (11) into the top opening of the main elevating housing (5) and push down to stop. Place bevel gear (10) in position. Using WS-89 spanner wrench, screw outer elevating sleeve into bevel gear. Slide outer elevating sleeve with bevel gear upward until it stops. Place bevel gear (14) together with sleeve nut (15) into main elevating housing, meshing bevel gears.



*Note position of setscrew hole in housing to bevel gear (14).

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

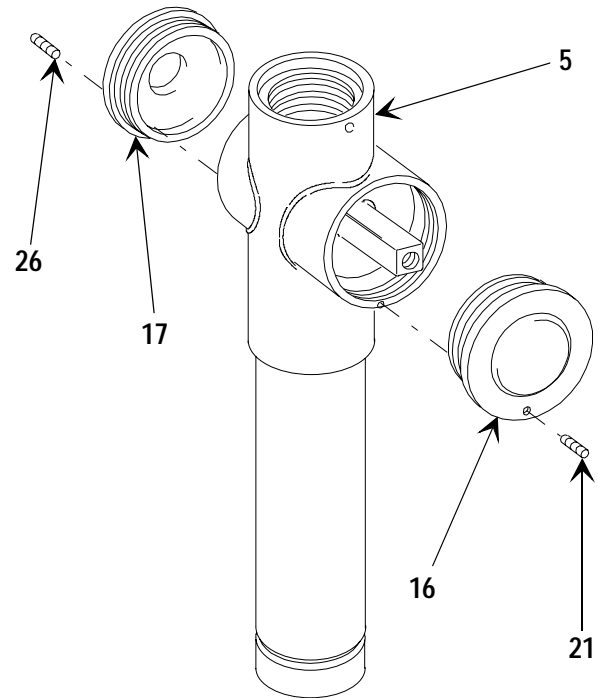
REASSEMBLY (Cont)

WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

If mechanical drive housing (16) is new, perform steps 14 through 18. If mechanical drive housing (17) is new, perform steps 19 through 23. If main elevating housing (5) is new, perform steps 14 through 23. If installing previously matched component parts, proceed to step 24.



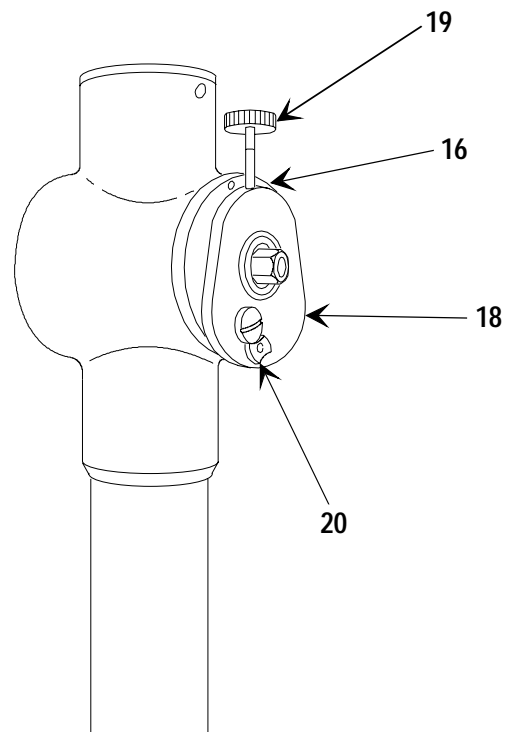
- 14 Install mechanical drive housing (16). Tighten using adjustable spanner wrench.

- 15 Place drill guide #12944234 (18) on mechanical drive housing (16) and tighten locking head screw (19).

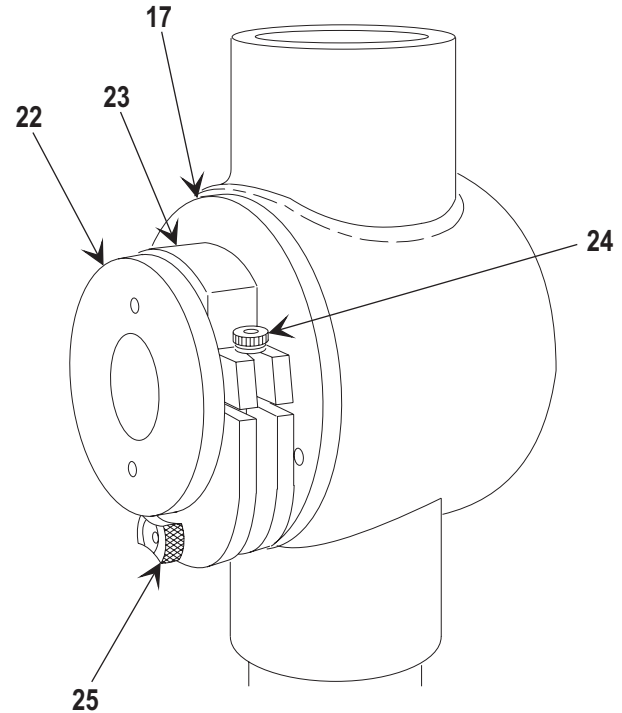
- 16 Install 9/64-in. drill bushing (20) and set the depth of 9/64-in. drill using depth block and tape. Drill to exact depth.

- 17 Remove 9/64-in. drill bushing and install a #19 drill bushing.

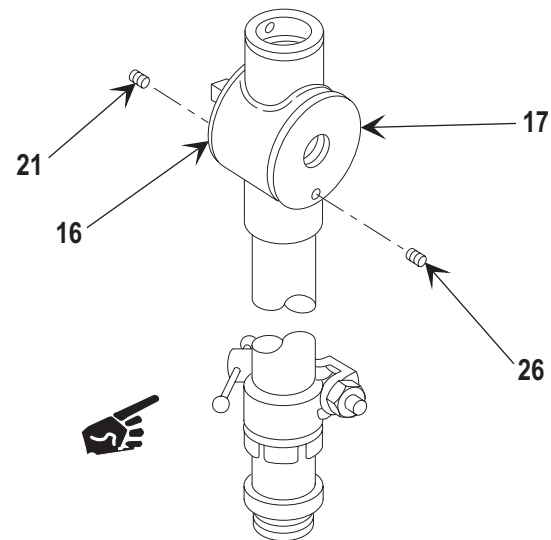
- 18 Set the depth of #19 drill using depth block and tape. Drill to exact depth. Remove drill guide (18) and tap a 5mm hole to depth. Apply thread locking compound (item 25, app D) to setscrew (21) and secure with 2.5mm key wrench.



- 19 Install mechanical drive housing (17). Tighten using adjustable spanner wrench and install protective plug (22).
- 20 Place drill guide #12944233 (23) on protective plug (22) and tighten locking head screw (24).
- 21 Install 9/64-in. bushing (25) and set depth of 9/64-in. drill using depth block and tape. Drill to exact depth.
- 22 Remove 9/64-in. drill bushing and install #19 drill bushing.
- 23 Set depth of #19 drill using depth block and tape. Drill to exact depth. Remove drill guide (23) and protective plug (22). Tap a 5mm hole to depth. Apply adhesive (item 1, app D) to setscrew (26) and secure with 2.5mm key wrench. Proceed to step 25.



- 24 Install mechanical drive housing (16) to assembled location using adjustable spanner wrench. Apply thread locking compound (item 25, app D) to setscrew (21) and secure with 2.5mm key wrench. Screw on mechanical drive housing (17) to assembled position using adjustable spanner wrench. Apply adhesive (item 1, app D) to setscrew (26) and secure with 2.5mm key wrench.



3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

REASSEMBLY (Cont)

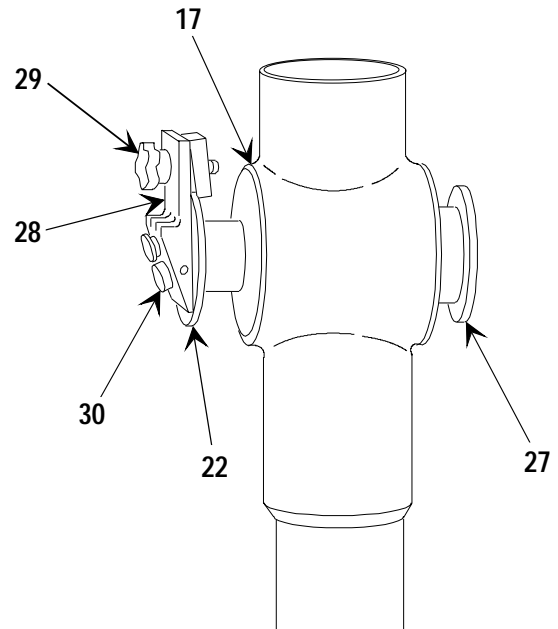
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

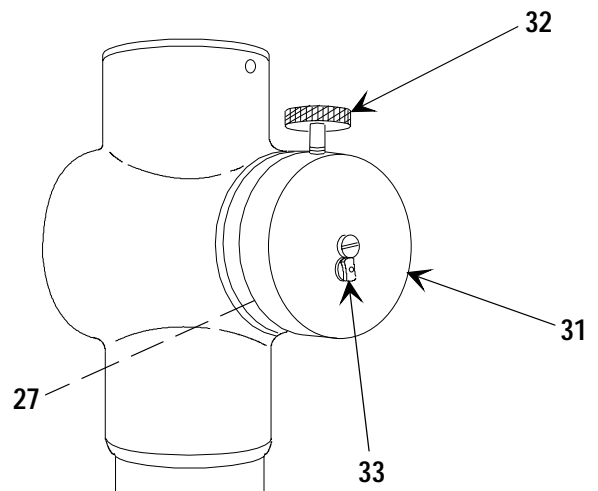
NOTE

If protective plug (22) or mechanical drive housing (17) is new, perform steps 25 through 30. If machine bushing (27) or mechanical drive housing (17) is new, perform steps 31 through 35. If installing previously matched component parts, proceed to note preceding step 36.

- 25 Install protective plug (22).
- 26 Place drill guide #12944229 (28) on protective plug (22) and secure with knob (29).
- 27 Insert 4mm drill bushing (30) into drill guide (28). Set depth of 4mm drill using depth block and tape. Drill to exact depth.
- 28 Leaving drill guide (28) in place, remove protective plug (22) from mechanical drive housing (17).
- 29 Insert #10 drill bushing into drill guide (28) and using #10 drill, drill through the protective plug (22).
- 30 Remove drill guide (28) and tap a 6mm thread through protective plug (22).



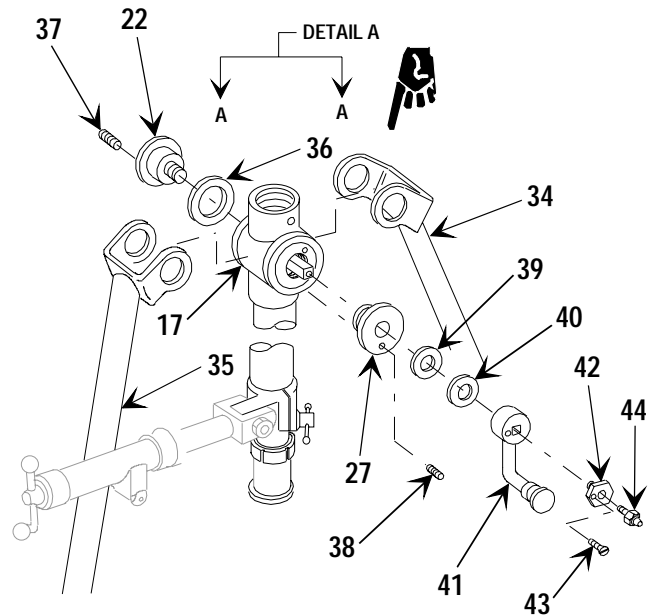
- 31 Screw on machine bushing (27) using adjustable spanner wrench.
- 32 Place drill guide #12944231 (31) on machine bushing (27) and tighten with locking head screw (32).



- 33 Install 9/64-in. drill bushing (33) into drill guide (31); set 9/64-in. drill using depth block and tape. Drill to exact depth. Remove 9/64-in. drill bushing and install #19 drill bushing.
- 34 Set depth of #19 drill using depth block and tape. Drill to exact depth.
- 35 Remove drill guide (31) and tap a 5mm hole to depth. Remove machine bushing (27).

NOTE

- Verify chain assembly is not twisted prior to reassembly of mortar mount legs.
- Assemble right mortar mount leg first on back side (without hand crank) of elevating mechanism; then left mortar mount leg (leg with cross-leveling bracket) with mechanical drive housing.
- To aid in reassembly, note the position of main elevating housing's setscrew hole to specific mortar mount legs and protective plug/machine bushing.



- 36 Put right mortar mount leg (34) and left mortar mount leg (35) on elevating mechanism. Install flat washer (36) by sliding it between mechanical drive housing (17) and left mortar mount leg. Using adjustable spanner wrench, install protective plug (22) to assembled position. Apply thread locking compound (item 25, app D) and secure with setscrew (37), using 3mm key wrench. Attach chain assembly, if previously removed.
- 37 Install machine bushing (27), tighten with adjustable spanner wrench to assembled position, apply thread locking compound (item 25, app D), and secure with setscrew (38) using 2.5mm key wrench.
- 38 Install flat washer (39), spring washer (40) (concave side towards flat washer), and hand crank (41), and connect with machine screw (42). Secure with screw (43). If removed, install new lubrication fitting (44).

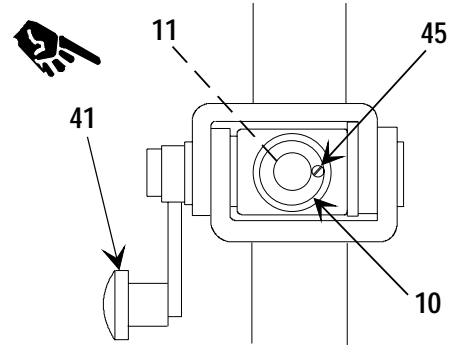
3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

REASSEMBLY (Cont)

- 39** Make sure the bevel gears are lined up and mesh. Install WS-89 spanner wrench into the bottom of the main elevating housing (5). While holding the hand crank (41), turn the wrench clockwise until tight.

NOTE

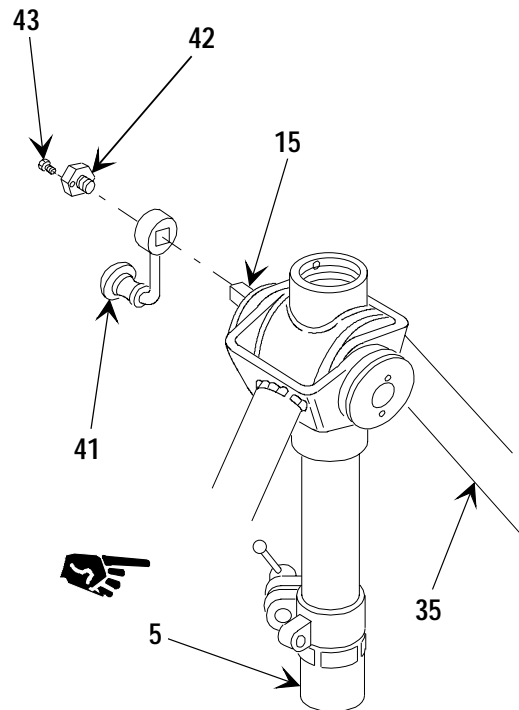
Tapping elevating hand crank in a counterclockwise direction with a plastic hammer may be necessary to properly align outer elevating sleeve and bevel gear.



DETAIL A

- 40** Lay mortar mount on bench with elevating hand crank (41) up. Brace WS-89 spanner wrench against the left mortar mount leg (35) (with cross leveling mechanism) of the mortar mount. A pipe over the handle of the wrench may help brace it against the mortar mount leg. Tighten the outer elevating sleeve (11) into the bevel gear (10) until the thread of the setscrew (45, Detail A) in the outer elevating sleeve and the bevel gear line up. Apply thread locking compound (item 25, app D) and install setscrew, using 2mm key wrench.

- 41** To adjust tension of hand crank (41), remove screw (43) and machine screw (42). Lift hand crank from sleeve nut (15) and rotate 90 degrees clockwise to tighten or 90 degrees counterclockwise to loosen. Repeat as needed. If hand crank is new, assemble machine screw and hand crank to correct tension position. Mark hand crank through hole in machine screw. Remove machine screw and drill 4mm hole to 3mm depth in hand crank. Re-install machine screw. Apply thread locking compound (item 25, app D) to screw (43) and secure.

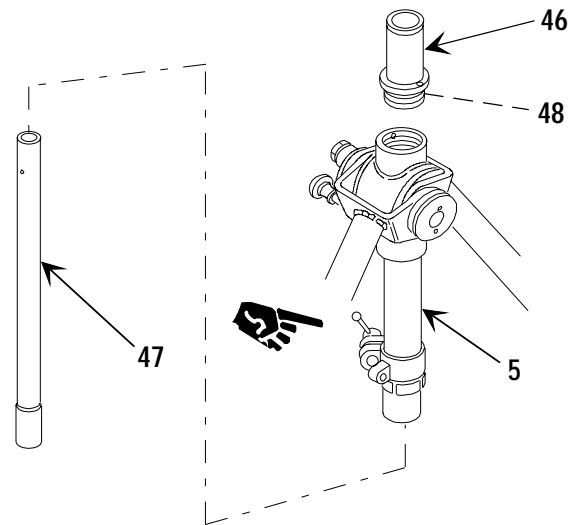


WARNING

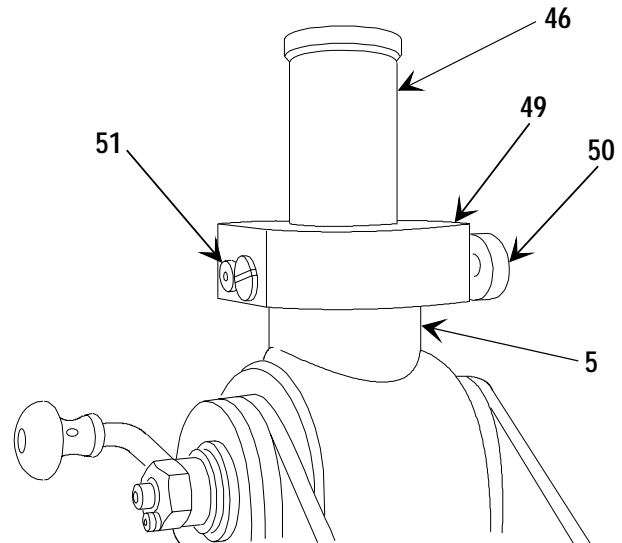
Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

If mechanical drive housing (46) or main elevating housing (5) is new, perform steps 42 through 48. If installing previously matched component parts, proceed to step 49.

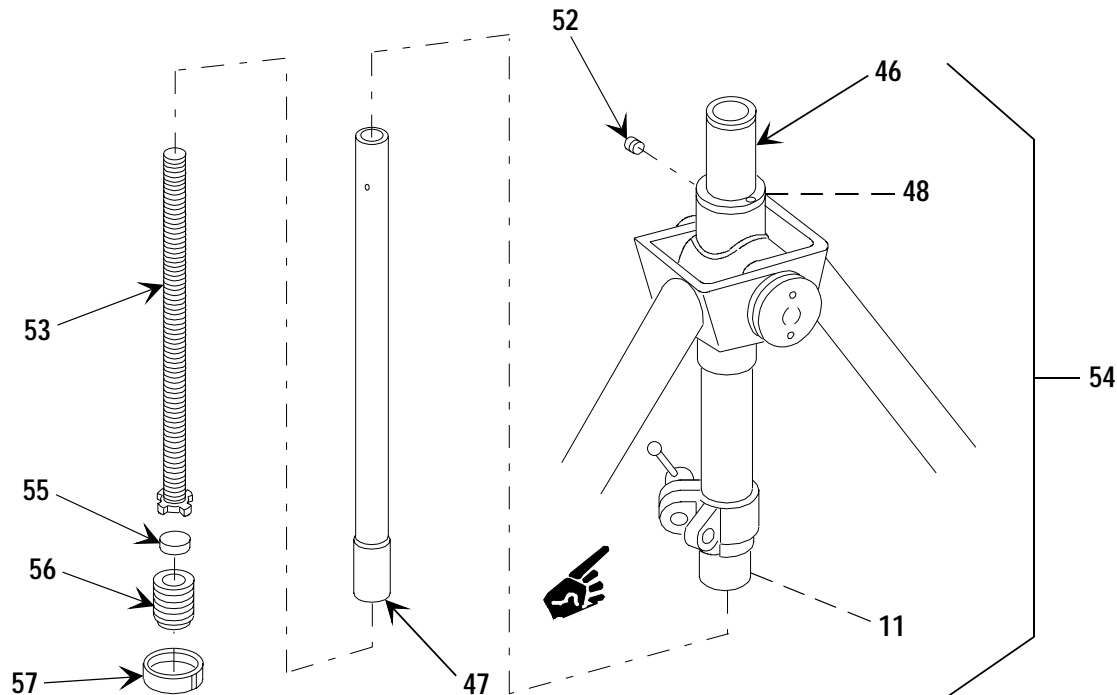


- 42** Before drilling, remove inner elevating sleeve (47) from the main elevating housing (5) if installed. Refer to disassembly step 5. Remove preformed felt (48) from mechanical drive housing (46).
- 43** Install mechanical drive housing (46) and tighten using 58/62 hook wrench.
- 44** Place drill guide #12944232 (49) on mechanical drive housing (46) and tighten locking head screw (50).
- 45** Install 9/64-in. drill bushing (51) into drill guide.
- 46** Drill a 9/64-in. hole through the mechanical drive housing (46) and main elevating housing (5).
- 47** Remove 9/64-in. drill bushing and install #19 drill bushing. Set depth of #19 drill using depth block and tape. Drill to exact depth.
- 48** Remove drill guide (49) and tap a 5mm hole to depth. Remove mechanical drive housing (46).



3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

REASSEMBLY (Cont)



- 49** Pack preformed felt (48) with GA grease (item 11, app D). Install preformed felt in mechanical drive housing (46). Using 58/62 hook wrench, install mechanical drive housing until setscrew holes line up. Apply thread locking compound (item 25, app D) and install setscrew (52).

NOTE

It will be necessary to prevent inner elevating sleeve (47) from turning to ensure gears are meshed.

- 50** Install elevating screw (53) into inner elevating sleeve (47) and insert both into the bottom of the elevating mechanism (54). Ensure that spline of elevating screw meshes with grooves of outer elevating sleeve (11). Inner elevating sleeve must protrude from the top of the mechanical drive housing (46). Install thrust washer bearing (55) and machine plug (56) until tight, using WS-93 spanner wrench. Back off machine plug so that elevating mechanism operates freely. Install round nut (57) using 52/55 hook wrench.

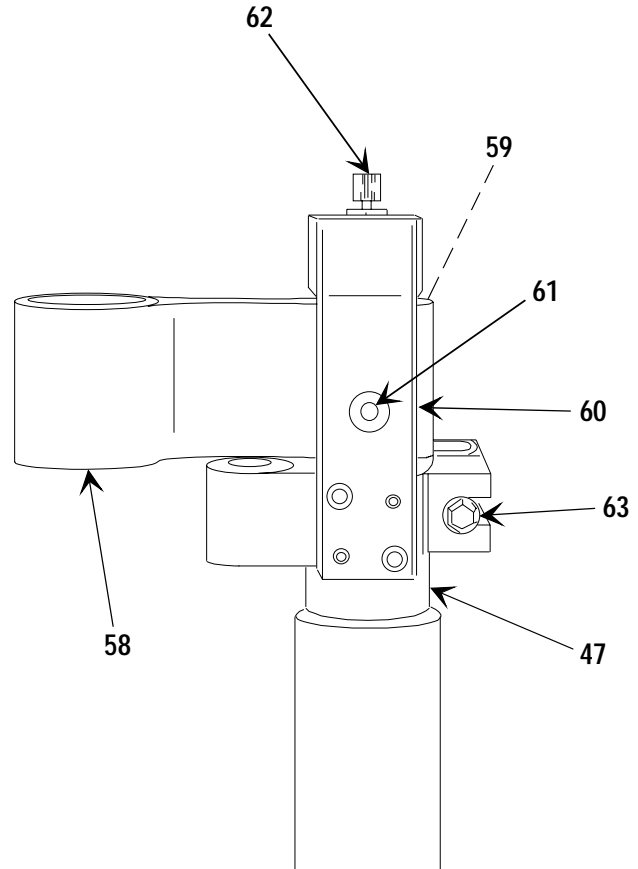
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

If inner elevating sleeve (47), traversing extension housing (58), or machine bushing (59) is new, or pin removed from traversing extension housing was of tapered design, perform steps 51 through 54. If installing previously matched component parts, proceed to step 55.

- 51 Assemble traversing extension housing (58) onto inner elevating sleeve (47) and screw on machine bushing (59).

**NOTE**

- A gage is included with drill guide #12901136 (60) to set the drill bushing (61) to the correct height using the socket head capscrew (62) as a stop. Tighten locking head capscrew (63).
- Remove traversing nut from traversing extension housing to aid in drilling.

- 52 Place drill guide #12901136 (60) on traversing extension housing (58) and to the inner elevating sleeve (47), locating from the top of the traversing extension housing.

NOTE

If replacing the old design tapered pin with a new grooved pin, drill a new hole offset 45 degrees from old hole.

- 53 Using 13/64-in. drill, drill through the traversing extension housing (58).
- 54 Remove drill guide (60) and, using 6mm hand reamer, ream the hole.

3-8. M190/M191 MORTAR MOUNT AND M120/M121 ELEVATING MECHANISM (Cont).

REASSEMBLY (Cont)

- 55** Install new preformed packing (64) on inner elevating sleeve (47). Install elevating mechanism (54) into traversing extension housing (58). Turn and align correct holes in traversing extension housing and elevating mechanism. Screw on machine bushing (59) with adjustable spanner wrench to assembled position. Install new grooved pin (65).

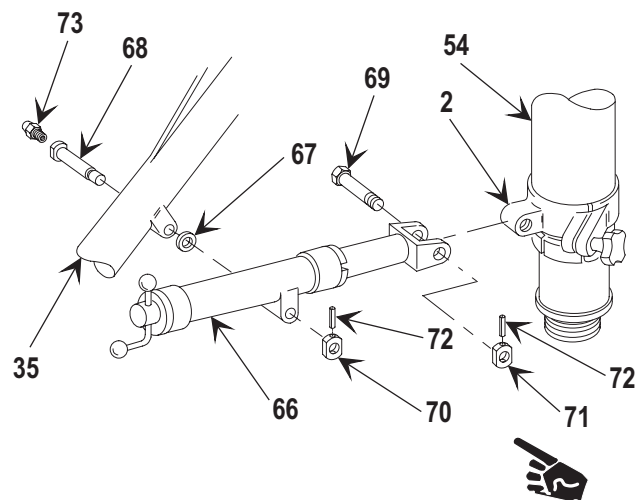
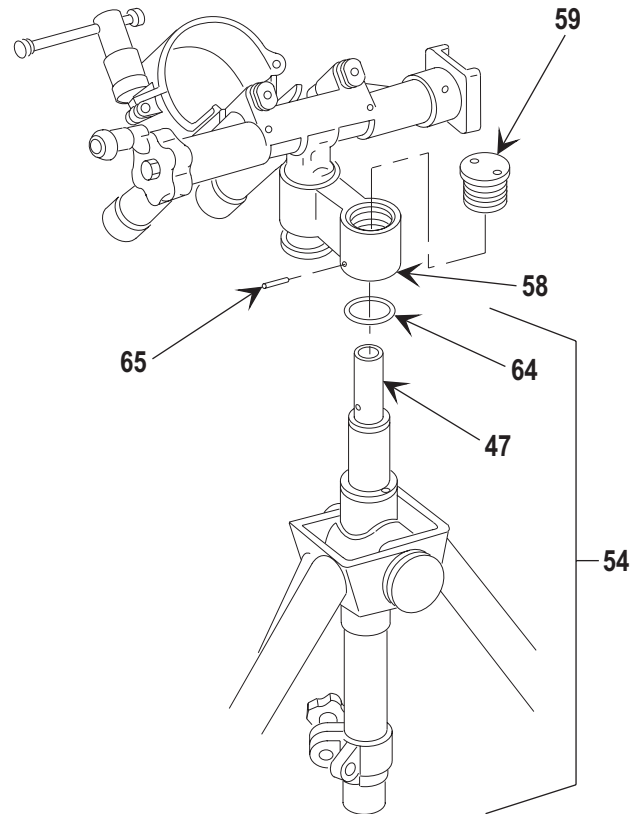
NOTE

- If cross leveling mechanism (66) binds or cannot be assembled, check location of flat washer (67), the orientation and part number of loop clamp (2), and mortar mount legs.
- If pivot shaft (68), shoulder bolt (69), or nuts (70 and 71) are new, perform step 56. If installing previously matched component parts, proceed to step 57.

WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

- 56** Install nut (70) on pivot shaft (68) and nut (71) on shoulder bolt (69). Using 3mm drill, drill holes for spring pin. Remove two nuts.



- 57** Align holes in cross leveling mechanism (66) and left mortar mount leg (35). Install pivot shaft (68) and flat washer (67). Install shoulder bolt (69) connecting cross leveling mechanism to elevating mechanism (54). Screw on two nuts (70 and 71) to assembled position with 16mm wrench and adjustable wrench and secure with two new spring pins (72). If removed, install new lubrication fitting (73) to pivot shaft.

TEST

Check proper operation of elevating mechanism, traversing gear assembly, and cross leveling mechanism. Check proper engagement of traversing extension plunger in all three positions. Check proper folding of legs without excessive play. Check backlash in elevating mechanism. It must be less than 1/8 turn (45 degrees).

3-9. M190/M191 BIPOD LEG ASSEMBLY.

This task covers:

a. Inspection

b. Replacement

INITIAL SETUP

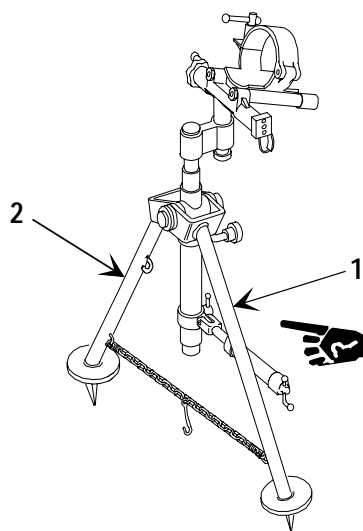
Tools/Special Tools

Small Arms Shop Set: Field Maintenance, Basic, Less Power
(SC 4933-95-CL-A11)

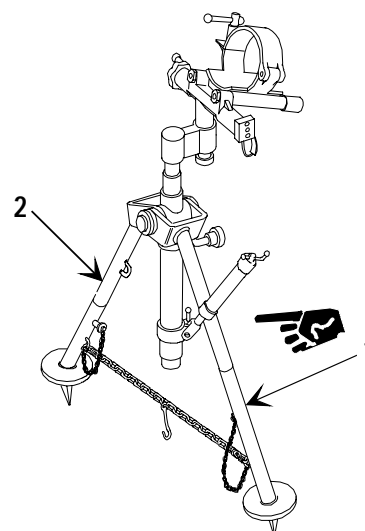
Equipment Condition

Chain assembly removed from
M190/M191 mortar mount
(p 2-14)

INSPECTION



M190



M191

Inspect left mortar mount leg (1) and right mortar mount leg (2) for dents, burrs, broken welds, and corrosion.

REPLACEMENT

If damaged or missing, replace left mortar mount leg (1) and right mortar mount leg (2) as authorized by Repair Parts and Special Tools List, appendix C.

3-10. CROSS LEVELING MECHANISM.

This task covers:

- | | |
|----------------------|---------------|
| a. Disassembly | d. Reassembly |
| b. Inspection/Repair | e. Test |
| c. Lubrication | |

INITIAL SETUP

Tools/Special Tools

Countersink, 90-degree, GGG-C-613
Drill, 4mm, ANSI-B94.11M
Guide, drill, 12944236
Jaw adapter 12577341 (MS-132)
Reamer, hand, 4mm, 12901130
Small Arms Shop Set: Field Maintenance, Basic, Less Power (SC 4933-95-CL-A11)
Tap, 4mm, ANSI-B94.9
Wrench, 19mm, B107.9
Wrench, hook, 40/42, 12577461
Wrench, key, 1.5mm, B18.3.2M
Wrench, spanner, 34mm, 12577338

Materials/Parts

Abrasive cloth (item 8, app D)
GA grease (item 11, app D)
GPL lubricating oil (item 12, app D)
Spring pin, D6347718-135P
Thread locking compound (item 25, app D)

Equipment Condition

Cross leveling mechanism removed from M190/M191 mortar mount and elevating mechanism (p 3-8)

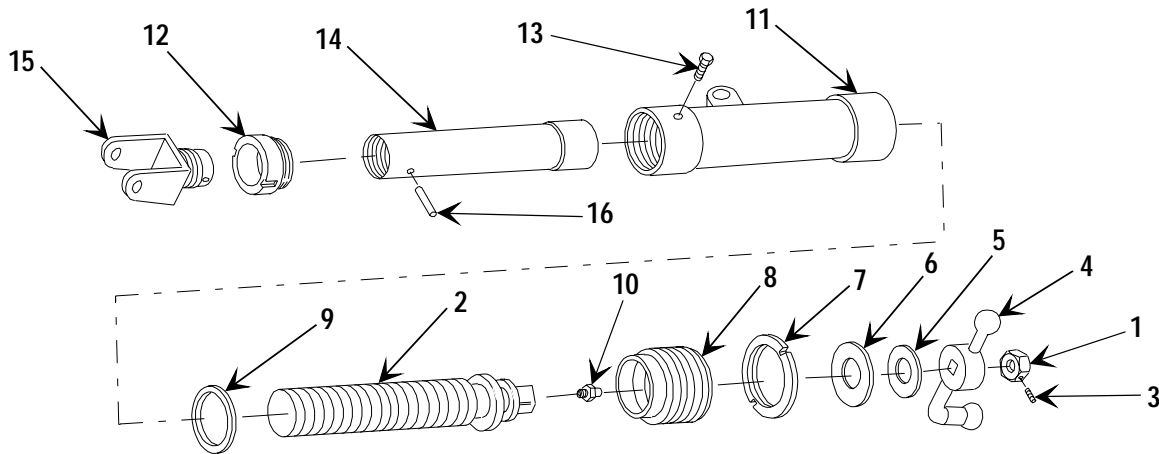
DISASSEMBLY

CAUTION

- Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.
- Parts were drilled and reamed for spring pins when they were assembled. To line up holes in proper order, parts must be put back exactly as they were assembled. Mark before disassembly. See general maintenance instructions.

NOTE

The cross leveling mechanism is most easily worked on in a vise. Clamp the jaws firmly onto mechanical drive housing pivot shaft lug. This provides excellent support to remove/install cross leveling parts.



- 1 Mark relative position of hexagon plain nut (1) and cross leveling screw (2). Remove setscrew (3) with 1.5mm key wrench. Unscrew hexagon plain nut with 19mm wrench, and remove hand crank (4), spring tension washer (5), and flat washer (6). Note concave side of spring tension washer is down. Discard spring tension washer if damaged.
- 2 Loosen round plain nut (7) with 40/42 hook wrench and remove machine bushing (8) and round plain nut with 34mm spanner wrench.
- 3 Remove cross leveling screw (2) together with flat washer (9). Remove lubrication fitting (10), if damaged.
- 4 Mark relative position of mechanical drive housing (11) and machine bushing (12). Remove screw (13). Using 40/42 hook wrench, loosen machine bushing.
- 5 Slide out housing sleeve (14) with attached parts.

WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

NOTE

Perform step 6 only if repair is needed.

- 6 Mark relative position of eye bracket (15) and housing sleeve (14). Place housing sleeve in vice using MS-132 jaw adapter. Remove spring pin (16) using punch. Unscrew and remove eye bracket. Loosen and remove machine bushing (12). Discard spring pin.

INSPECTION/REPAIR

Inspect for bends, corrosion, cracks, burrs, and wear. Remove corrosion and burrs using abrasive cloth (item 8, app D). Replace defective items per Repair Parts and Special Tools List, appendix C.

3-10. CROSS LEVELING MECHANISM (Cont).

LUBRICATION

Lubricate threads of cross leveling screw, using GA grease (item 11, app D). Using GPL lubricating oil (item 12, app D), lightly oil housing sleeve and all unpainted surfaces.

REASSEMBLY

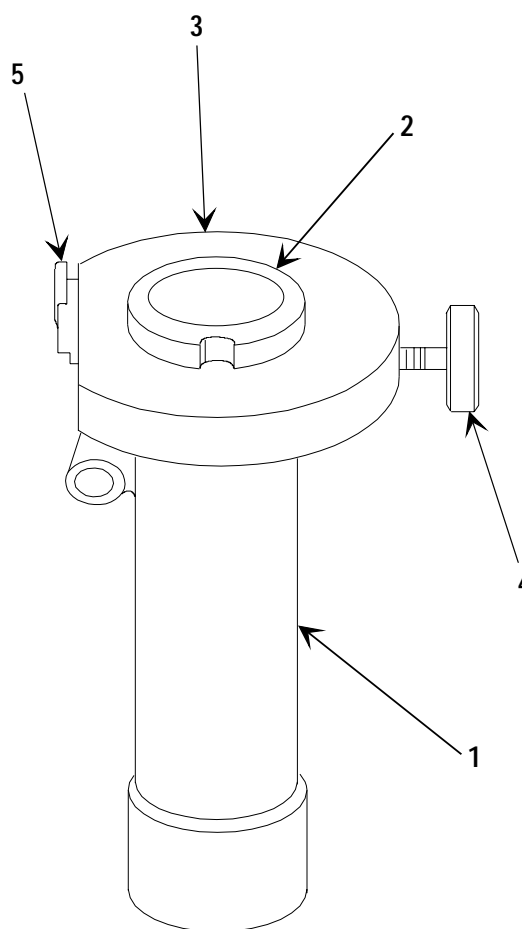
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

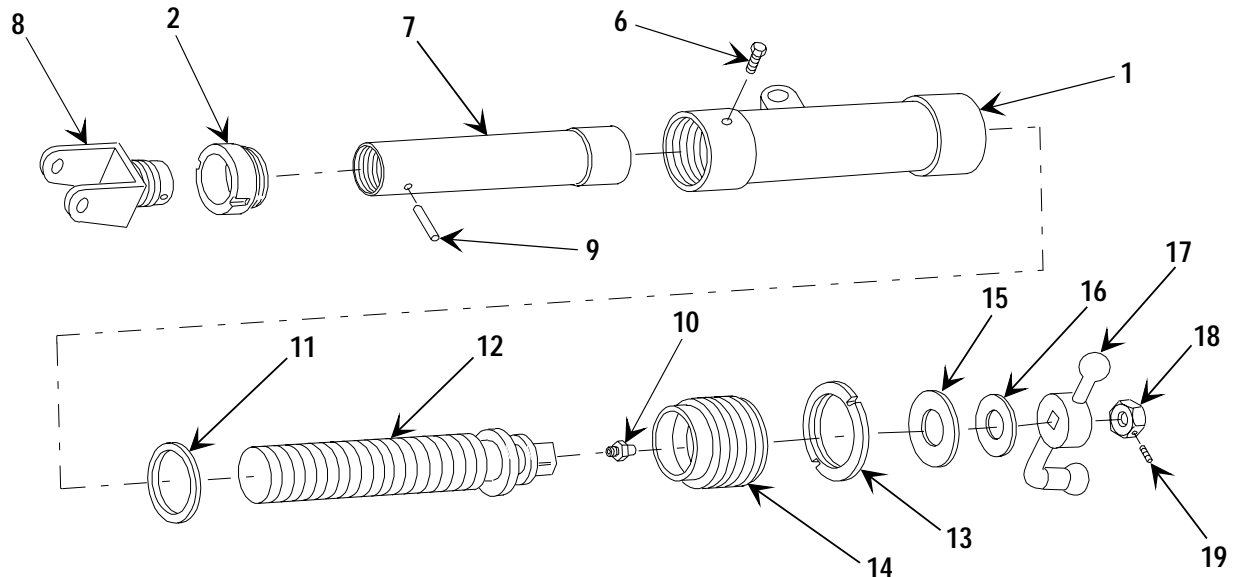
NOTE

If mechanical drive housing (1) or machine bushing (2) is new, perform steps 1 through 9. If installing previously matched component parts, proceed to step 10.

- 1 Place drill guide #12944236 (3) on mechanical drive housing (1) with surface mark "x" on drill guide facing machine bushing end.
- 2 Assemble machine bushing (2) into mechanical drive housing (1) and tighten with 40/42 hook wrench.
- 3 With drill guide (3) flush against machine bushing (2), tighten locking head screw (4).
- 4 Insert 9/64-in. drill bushing (5) into drill guide (3).
- 5 Drill a 9/64-in. hole through mechanical drive housing (1) and machine bushing (2). Remove machine bushing.
- 6 Insert #19 drill bushing into drill guide (3).
- 7 Drill a #19 hole through mechanical drive housing (1). Remove drill guide (3).
- 8 Using 90-degree countersink, countersink to screw head size in mechanical drive housing (1).
- 9 Tap a 4mm hole through machine bushing (2).



3-10. CROSS LEVELING MECHANISM (Cont).



WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

- 10 Install machine bushing (2) with 40/42 hook wrench onto mechanical drive housing (1). Put thread locking compound (item 25, app D) on screw (6) and secure.

NOTE

If housing sleeve (7) is new, perform steps 11 through 14. If eye bracket (8) is new, perform steps 12 through 14. If installing previously matched component parts, proceed to step 15.

- 11 Mark relative position of existing spring pin hole on yoke of eye bracket (8).
- 12 Screw eye bracket (8) to assembled position on housing sleeve (7). Place MS-132 jaw adapter around housing sleeve and secure in vise.

NOTE

The location marked on housing sleeve (7) in step 13 should be 90 degrees from any existing hole in either the housing sleeve or eye bracket (8).

- 13 Measure 25mm (0.98 in.) from bottom of yoke of eye bracket (8). Mark location on housing sleeve (7), using scratch awl.

WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

- 14** Using 4mm drill, bore a hole at the marked location completely through housing sleeve (7) and eye bracket (8). Remove eye bracket from housing sleeve.
- 15** Slide housing sleeve (7) into mechanical drive housing (1). Screw eye bracket (8) to assembled position. Ream 4mm hole in housing sleeve. Install new spring pin (9). Check for free movement.
- 16** Install new lubrication fitting (10), if removed. Put flat washer (11) on cross leveling screw (12) and install cross leveling screw into housing sleeve (7). Use thread locking compound (item 25, app D) on round plain nut (13) and machine bushing (14). Using 34mm spanner wrench, install machine bushing with round plain nut. Adjust machine bushing to allow cross leveling screw to turn freely. Secure by turning round plain nut with 40/42 hook wrench. Check for free movement of cross leveling screw in housing sleeve and ensure there is minimal end play.
- 17** Put flat washer (15) and spring tension washer (16) (concave side towards flat washer) on cross leveling screw (12). Install hand crank (17) and secure hexagon plain nut (18) with 19mm wrench. Install setscrew (19) with 1.5mm key wrench. Adjust tightness so that hand crank turns freely.

TEST

Check proper operation of cross leveling mechanism in both directions. Check that backlash is less than 1/8 turn (45 degrees).

3-11. BUFFER MECHANISM.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Lubrication
- d. Reassembly
- e. Test

INITIAL SETUP

Tools/Special Tools

Drill, 4mm, ANSI-B94.11M
Guide, drill, 12901135
Small Arms Shop Set: Field Maintenance, Basic, Less Power (SC 4933-95-CL-A11)
Tap, 6mm, ANSI-B94.9-1987
Wrench, 11mm, ANSI B107.9-1978
Wrench, 19mm, B107.9
Wrench, box, WS-86, 12577343
Wrench, box, WS-95, 12577348
Wrench, key, 3mm, ANSI-B18.3.2M
Wrench, retainer, 12901134
Wrench, retainer, 12944242

Materials/Parts

Abrasive cloth (item 8, app D)
GA grease (item 11, app D)
GPL lubricating oil (item 12, app D)
Lockwasher, MS35338-44 (2)
Preformed packing, 12577319 (2)
Thread locking compound (item 25, app D)

Equipment Condition

Buffer mechanism removed from the M190/M191 mortar mount (p 3-8)

Personnel Required

Two

DISASSEMBLY

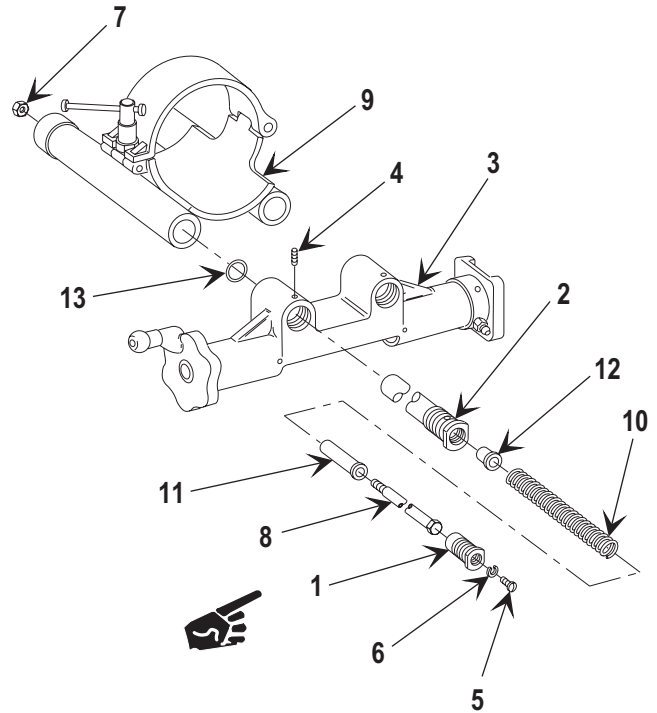
CAUTION

- Be careful when using WS-95 or WS-86 spanner wrenches to prevent slippage. Make sure wrenches are securely attached to avoid breaking tool edges.
- Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.
- Do not exchange parts between sides of buffer mechanism. Mark parts as they are disassembled.

NOTE

The maintenance procedure is identical for both sides of the buffer mechanism. Repeat the following procedure for the other side.

- 1 Mark relative positions of machine plug (1), mechanical drive housing (2), and traversing gear housing assembly (3). Using 3mm key wrench, remove setscrew (4). Using screwdriver, remove slotted screw (5) and lockwasher (6). Discard lockwasher. Unscrew machine plug using WS-95 box wrench and retainer wrench, 12901134.



WARNING

The buffer mechanism operates under spring tension. Use extreme caution when removing spring.

- 2 One soldier holds buffer mechanism with top of wrenching bolts pointing into table (hexagon plain nuts up). Using 19mm wrench, remove hexagon plain nut (7). Unscrew wrenching bolt (8) from buffer housing assembly (9), using 17mm socket and ratchet to release helical spring (10). Keep control of the wrenching bolt until helical spring is totally extended. Slide sleeve bushing (11), helical spring, and sleeve spacer (12) out of mechanical drive housing (2).
- 3 Loosen mechanical drive housing (2) using WS-86 box wrench and retainer wrench, 12944242, and separate from buffer housing assembly (8). Remove mechanical drive housing from traversing gear housing assembly (3). Remove and discard preformed packing (13).

INSPECTION/REPAIR

- 1 Inspect for burrs and worn or defective parts. Repair by removing burrs and by replacing defective parts as authorized. Replace machine plug if wrench edges are broken.
- 2 Inspect for damage. Restore threads or replace defective parts as authorized in Repair Parts and Special Tools List, appendix C.
- 3 Check for free movement of mechanical drive housing in buffer housing assembly. Replace mechanical drive housing if not moving freely or if wrench edges are broken.
- 4 Check both helical springs for equal free length within 19/32 inch (15 mm). The total resting length of each spring must not be less than 17.0 inches (43.2 cm). Replace both springs if either condition is not met.

3-11. BUFFER MECHANISM (Cont).

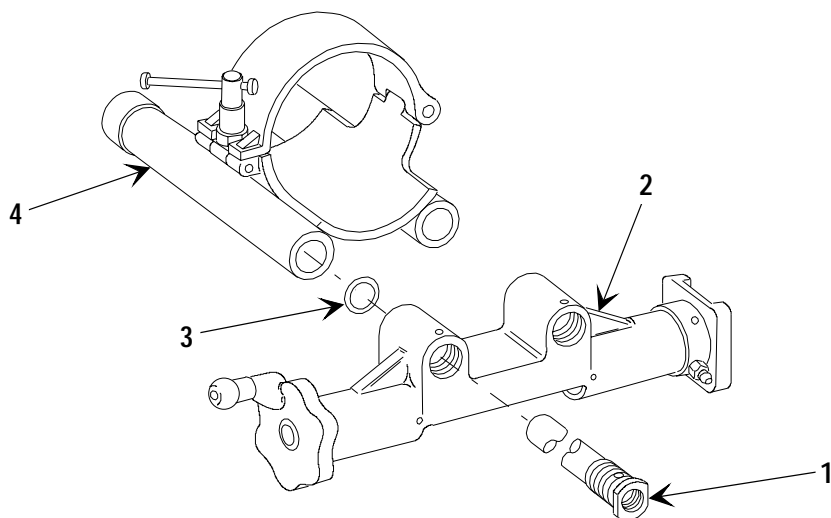
LUBRICATION

CAUTION

To avoid damage to assembly, do not pack buffer cylinders with grease.

Apply GA grease (item 11, app D) on helical springs, wrenching bolts, sleeve bushings, and sleeve spacers. Apply a light coat of GPL (item 12, app D) to all unpainted surfaces.

REASSEMBLY



NOTE

- The maintenance procedure is identical for both sides of the buffer mechanism; therefore, repeat the following procedure for the other side. Do not mix parts between sides.
- The buffer mechanism is most easily worked on in a vise. Clamp the jaws firmly onto the buffer housing assembly. This arrangement provides excellent support to install the helical spring.

- 1 Secure buffer mechanism in a vise. Screw mechanical drive housing (1) into traversing gear housing assembly (2) until snug. Install new preformed packing (3) onto mechanical drive housing.

CAUTION

To avoid broken edges on mechanical drive housing (1), apply wrench firmly.

- 2 Guide mechanical drive housing (1) into the buffer housing assembly (4). Tighten mechanical drive housing with WS-86 box wrench and retainer wrench, 12944242, to assembled position.

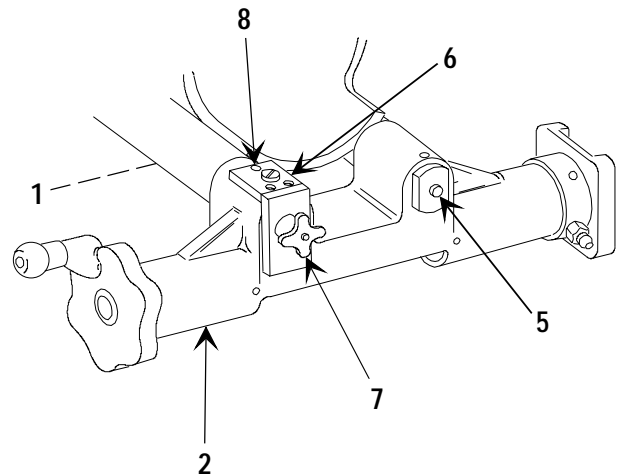
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

NOTE

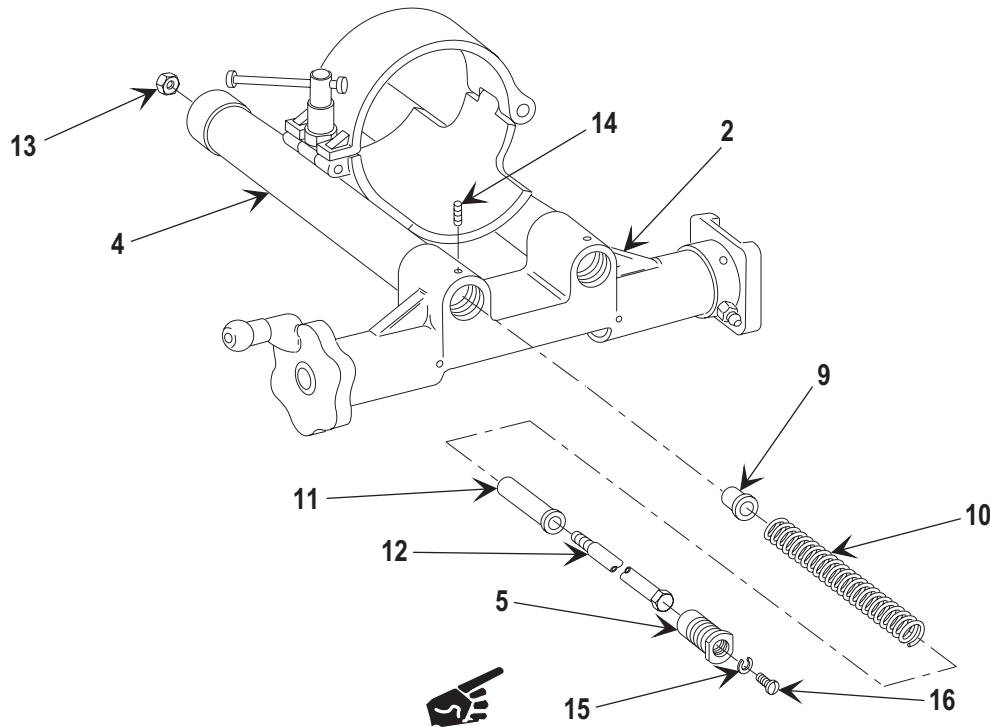
If mechanical drive housing (1), traversing gear housing assembly (2), or machine plug (5) is new, perform steps 3 through 9. If installing previously matched component parts, proceed to step 10.

- 3** Place drill guide #12901135 (6) onto traversing gear housing assembly (2) and tighten knob (7).
- 4** Install 4mm drill bushing (8) into drill guide (6).
- 5** Drill a 4mm hole through traversing gear housing assembly (2) and mechanical drive housing (1). Remove drill guide (6) and assemble machine plug (5) using WS-95 box wrench and retainer wrench, 12901134. Tighten until snug.
- 6** Using the 4mm drilled hole as a guide, drill a 4mm hole through machine plug (5).
- 7** Remove machine plug (5) and again place drill guide (6) onto traversing gear housing assembly (2) and mechanical drive housing (1).
- 8** Install #10 bushing into drill guide (6). Drill through traversing gear housing assembly (2) and mechanical drive housing (1), using #10 drill.
- 9** Remove drill guide (6) and tap a 6mm hole.



3-11. BUFFER MECHANISM (Cont).

REASSEMBLY (Cont)



WARNING

The buffer mechanism operates under spring tension. Use extreme caution when installing helical spring.

- 10** Install sleeve spacer (9) and helical spring (10) into buffer housing assembly (4) as shown. Assemble sleeve bushing (11) and wrenching bolt (12), and insert through helical spring into buffer housing assembly. Firmly grasp ratchet and 17mm socket and CAREFULLY turn wrenching bolt so it protrudes from the buffer housing assembly. Install hexagon plain nut (13).
- 11** Screw machine plug (5) to assembled position with WS-95 box wrench and retainer wrench, 12901134. Apply thread locking compound (item 25, app D) to setscrew (14) and install in traversing gear housing assembly (2), using 3mm key wrench. Do not overtighten. Remove retainer wrench and WS-95 box wrench. Install new lockwasher (15) and slotted screw (16).
- 12** Remove longitudinal play between buffer housing assembly (4) and traversing gear housing assembly (2). Screw wrenching bolt (12) toward traversing gear housing assembly until spring tension is removed. Screw bolt back until resistance begins. Hold bolt in place and lock by tightening hexagon plain nut (13) with 19mm wrench.

TEST

Extend buffer mechanism. It must return to the original position when released.

3-12. BUFFER HOUSING ASSEMBLY AND CLAMP HANDLE ASSEMBLY.

This task covers:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Disassembly b. Inspection/Repair c. Lubrication | <ul style="list-style-type: none"> d. Reassembly e. Test |
|--|--|

INITIAL SETUP

Tools/Special Tools

Block, depth, 12901137
 Guide, drill, 12944237
 Small Arms Shop Set: Field Maintenance, Basic, Less Power (SC 4933-95-CL-A11)
 Tap, 5mm, ANSI-B94.9
 Torque wrench 12901100
 Torque wrench adapter 12577342
 Wrench, key, 2.5mm, ANSI-B18.3.2M

Materials/Parts

Abrasive cloth (item 8, app D)
 GA grease (item 11, app D)
 Headless grooved pin, D63464/1-06026
 Pressure sensitive adhesive tape (item 21, app D)
 Spring pin, D63477/1-133C (2)
 Thread locking compound (item 25, app D)

Equipment Condition

Buffer housing assembly removed from buffer mechanism (p 3-30)

DISASSEMBLY

WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

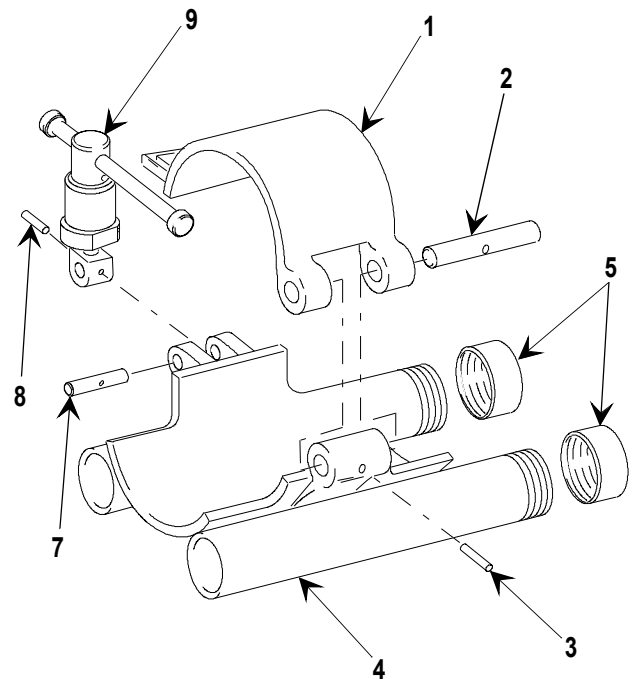
CAUTION

Parts were drilled and reamed for spring pins when they were assembled. To line up holes in proper order, parts must be put back exactly as they were assembled. Mark before disassembly. See general maintenance instructions.

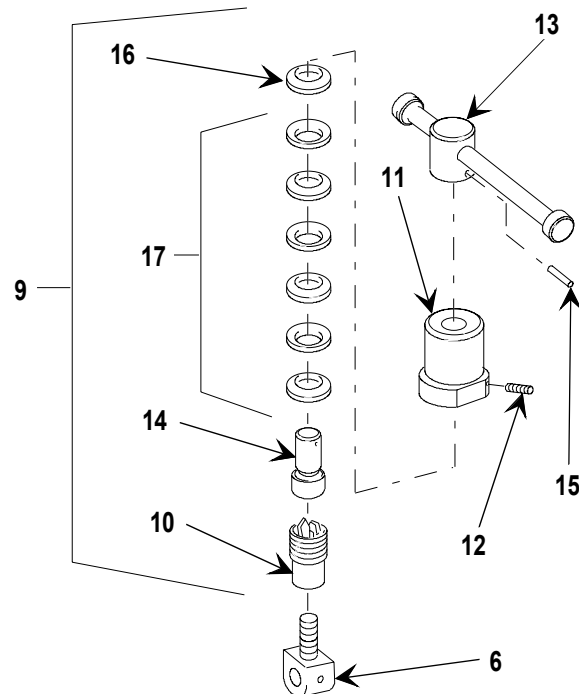
3-12. BUFFER HOUSING ASSEMBLY AND CLAMP HANDLE ASSEMBLY (Cont).

DISASSEMBLY (Cont)

- 1 Mark relative position of barrel collar (1) and headless straight pin (2). Drive spring pin (3) out of barrel collar with punch. Discard spring pin.
- 2 Extract headless straight pin (2) and remove barrel collar (1) from buffer housing (4). If damaged, remove two protective caps (5).
- 3 Mark relative position of eye bolt (6) and headless straight pin (7). Drive spring pin (8) out of headless straight pin with punch. Discard spring pin.
- 4 Extract headless straight pin (7) and remove eye bolt (6) together with clamp handle assembly (9).



- 5 Mark relative position of round nut (10) and sleeve nut (11).
- 6 Unscrew and separate the clamp handle assembly (9) from eye bolt (6).
- 7 Remove setscrew (12) with 2.5mm key wrench. Hold round nut (10) in vise and unscrew and separate sleeve nut (11) from round nut using 15-in. adjustable wrench.
- 8 Mark relative position of manual control handle (13) and half clutch (14). Drive headless grooved pin (15) out of manual control handle with punch. Remove manual control handle, half clutch, flat washer (16), and six spring tension washers (17). Note position of spring tension washers during removal. Discard headless grooved pin and discard spring tension washers if damaged.



INSPECTION/REPAIR

Inspect for burrs and worn or damaged parts. Repair by removing burrs and by replacing defective items as authorized by Repair Parts and Special Tools List, appendix C.

LUBRICATION

Apply a light coat of GA grease (item 11, app D) on spring tension washers. Apply GPL (item 12, app D) to all unpainted surfaces.

REASSEMBLY

WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

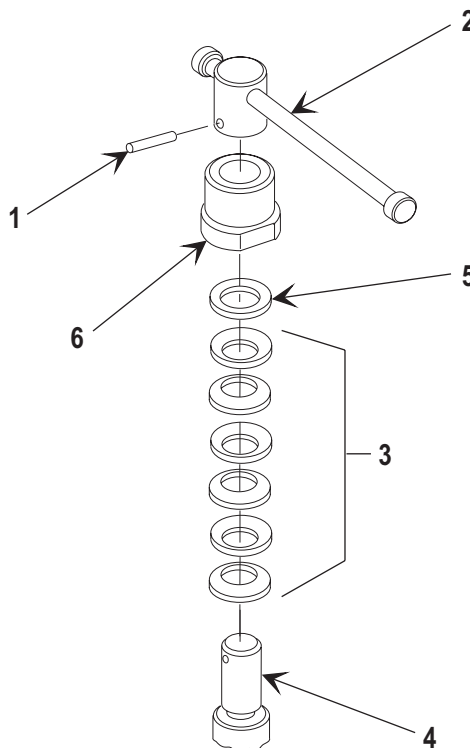
CAUTION

Parts were drilled and reamed for spring pins when they were assembled. To line up holes in proper order, parts must be put back exactly as they were disassembled. Mark before disassembly. See general maintenance instructions.

NOTE

Hole for headless grooved pin (1) will need to be drilled out to 6mm if manual control handle (2) is new or was previously machined for tapered pin.

- 1 Install six spring tension washers (3) concave-to-concave on half clutch (4). Install flat washer (5), sleeve nut (6), and manual control handle (2) on half clutch. Install new headless grooved pin (1) into manual control handle and half clutch.



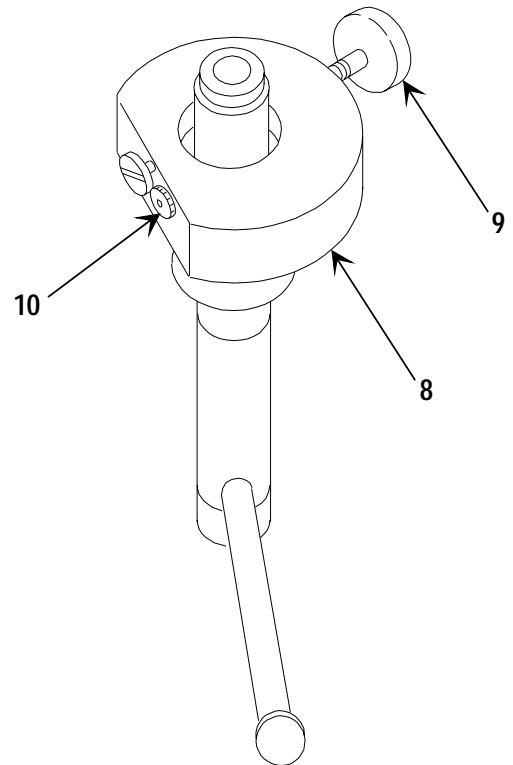
3-12. BUFFER HOUSING ASSEMBLY AND CLAMP HANDLE ASSEMBLY (Cont).

REASSEMBLY (Cont)

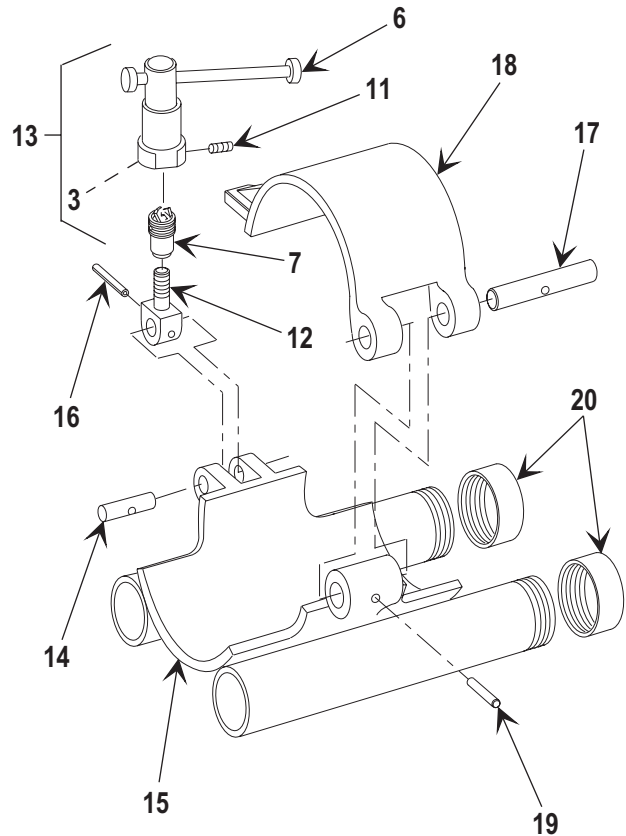
NOTE

If sleeve nut (6) or round nut (7) is new, perform steps 2 through 7. If installing previously matched component parts, proceed to step 8.

- 2** Assemble sleeve nut (6) with round nut (7). Using torque wrench and torque wrench adapter, turn until slippage is 18 to 22 ft-lb (24 to 30 N-m).
- 3** Place drill guide #12944237 (8) on sleeve nut (6) and tighten locking head screw (9).
- 4** Insert 9/64-in. drill bushing (10) into drill guide (8).
- 5** Set depth of 9/64-in. drill using depth block and tape. Drill to exact depth.
- 6** Remove round nut (7) and 9/64-in. drill bushing (10). Insert #19 drill bushing and, using #19 drill, drill through sleeve nut (6).
- 7** Remove drill guide (8) and tap a 5mm hole through sleeve nut (6).



- 8 Install round nut (7) into sleeve nut (6). Using torque wrench and torque wrench adapter, turn until slippage is 18 to 22 ft-lb (24 to 30 N·m). If torque cannot be obtained, replace six spring tension washers (3) and recheck torque. Apply thread locking compound (item 25, app D) to setscrew (11) and secure with 2.5mm key wrench.
- 9 Screw eye bolt (12) into clamp handle assembly (13) as shown.
- 10 Install headless straight pin (14) through eye bolt (12) and buffer housing (15). Secure with new spring pin (16).
- 11 Install headless straight pin (17) through barrel collar (18) and buffer housing (15). Secure with new spring pin (19).
- 12 If removed, install two new protective caps (20).



TEST

Check proper operation of clamp handle assembly.

3-13. TRAVERSING GEAR ASSEMBLY AND TRAVERSING GEAR HOUSING ASSEMBLY.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Lubrication
- d. Reassembly
- e. Test

INITIAL SETUP

Tools/Special Tools

Block, depth, 12901137
 Drill, 2mm, B94.11M
 Guide, drill, 12944235
 Jaws adapter 12577340
 Small Arms Shop Set: Field Maintenance, Basic, Less Power (SC 4933-95-CL-A11)
 Tap, 2.5mm, ANSI-B94.9
 Wrench, 8mm, ANSI B107.9-1978
 Wrench, 11mm/13mm, ANSI B107.9-1978
 Wrench, hook, 45/50, 12577462
 Wrench, key, 1.27mm, GGG-K-275
 Wrench, key, 2.5mm, ANSI-B18.3.2M
 Wrench, spanner, 31mm, 12577337
 Wrench, spanner, 34mm, 12577338

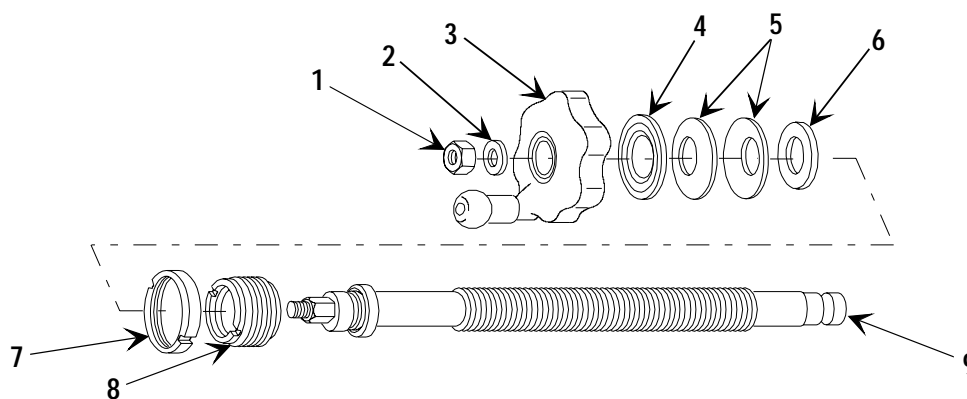
Materials/Parts

Abrasive cloth (item 8, app D)
 GA grease (item 11, app D)
 GPL lubricating oil (item 12, app D)
 Pressure sensitive adhesive tape (item 21, app D)
 Self-locking nut, 93-863
 Thread locking compound (item 25, app D)

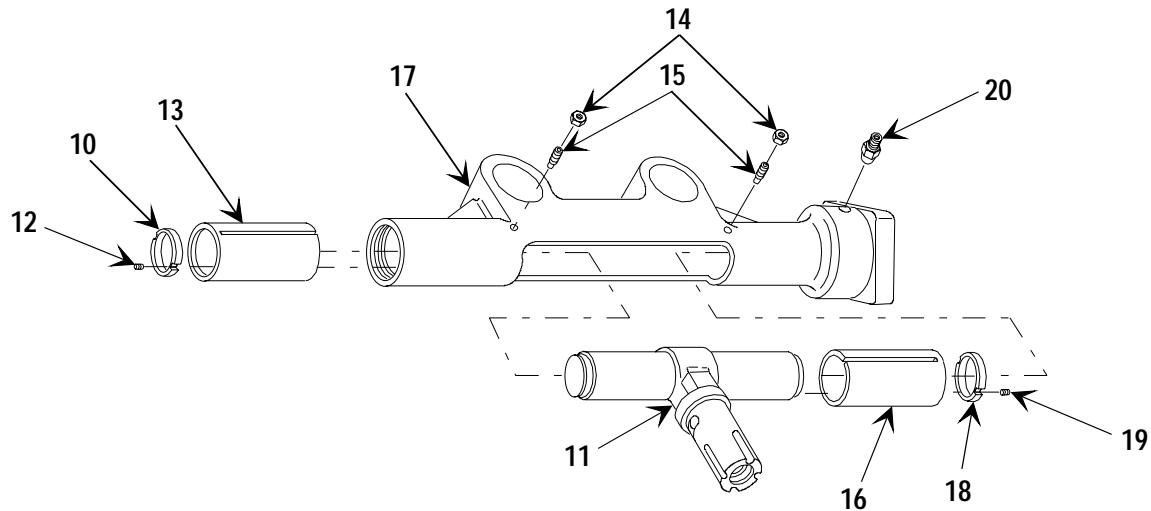
Equipment Condition

Traversing gear assembly removed from buffer mechanism (p 3-30)
 Traversing extension assembly removed from traversing gear assembly (p 3-44)

DISASSEMBLY



- 1 Using 13mm wrench, remove and discard self-locking nut (1). Remove flat washer (2), hand crank (3), beveled washer (4), two spring tension washers (5), and flat washer (6). Discard spring tension washers if damaged.
- 2 Using 45/50 hook wrench, loosen round plain nut (7) and remove machine bushing (8) using 34mm spanner wrench.
- 3 Unscrew and remove traversing screw (9).



CAUTION

Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.

- 4 Mark relative position of round plain nut (10) and traversing nut (11). Using 1.27mm key wrench, remove setscrew (12) from round plain nut and traversing nut. Using 31mm spanner wrench, remove round plain nut and sleeve bushing (13).
- 5 Using 8mm wrench, loosen two hexagon plain nuts (14). Using 2.5mm key wrench, remove two setscrews (15) together with hexagon plain nuts.
- 6 Remove traversing nut (11) together with sleeve bushing (16) from traversing gear housing assembly (17). Mark relative position of round plain nut (18) and traversing nut. Remove setscrew (19) using 1.27mm key wrench. Remove round plain nut using 31mm spanner wrench. Separate sleeve bushing from traversing nut.
- 7 If damaged, remove lubrication fitting (20) from traversing gear housing assembly (17).

INSPECTION/REPAIR

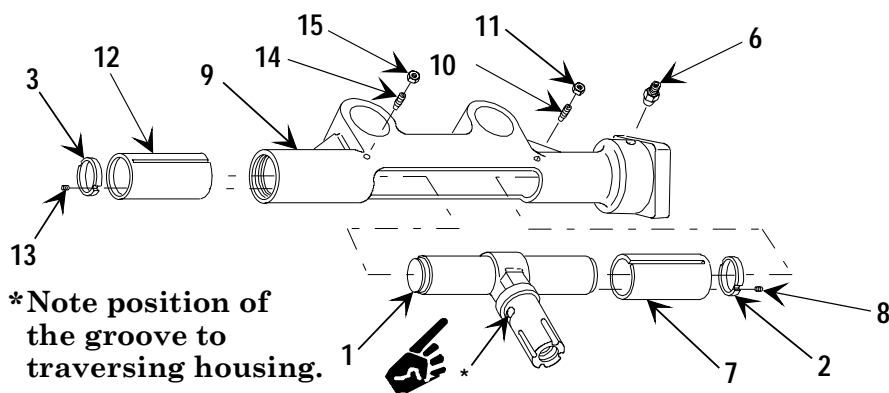
- 1 Inspect for damage. Restore threads or replace defective items per Repair Parts and Special Tools List, appendix C.
- 2 Inspect for burrs, cracks, and corrosion or wear. Remove burrs and corrosion using abrasive cloth (item 8, app D). Replace defective items per Repair Parts and Special Tools List, appendix C.

LUBRICATION

Lubricate internal threads using GA grease (item 11, app D). Apply a light coat of GPL (item 12, app D) to all unpainted surfaces.

3-13. TRAVERSING GEAR ASSEMBLY AND TRAVERSING GEAR HOUSING ASSEMBLY (Cont).

REASSEMBLY



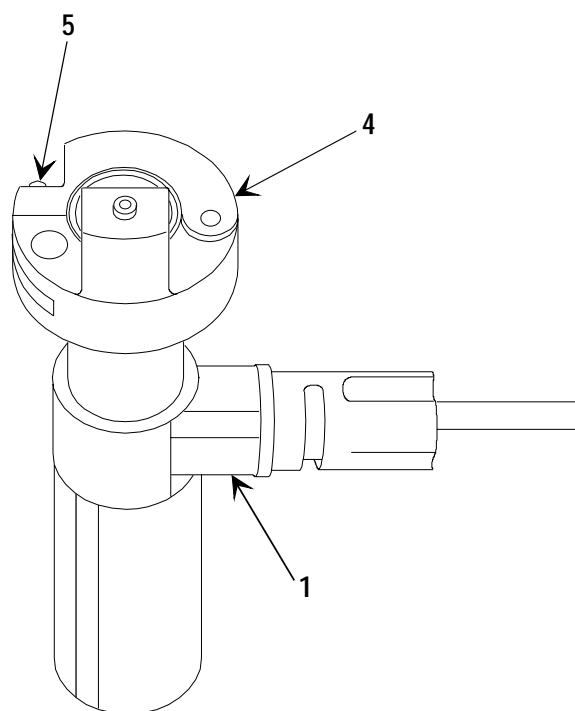
WARNING

Drilling of metal is a hazard. Flying metal chips can become embedded in the eyes and skin. Wear safety glasses. Seek medical assistance at once if injury occurs.

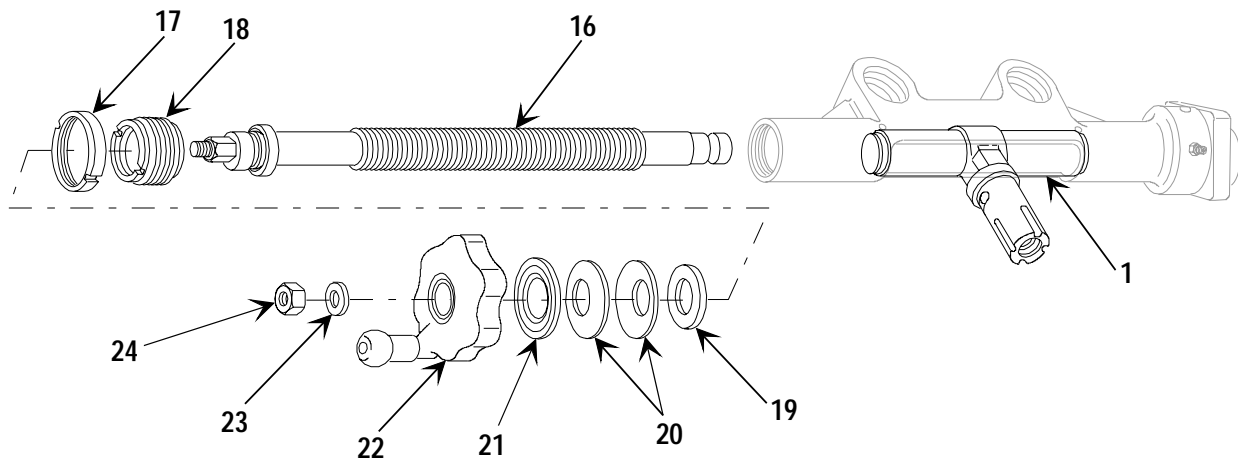
NOTE

If traversing nut (1) or round plain nuts (2 or 3) are new, perform steps 1 through 4. If installing previously matched component parts, proceed to step 5.

- 1 Install round plain nut (2) or (3) on traversing nut (1) using 31mm spanner wrench and tighten.
- 2 Place drill guide #12944235 (4) on traversing nut (1), making sure the bushing side of drill guide is in contact with round plain nut (2) or (3). Secure with locking screw (5).
- 3 Set depth of 2mm drill using depth block and tape. Drill to exact depth.
- 4 Remove drill guide (4) and tap a 2.5mm hole to depth. Remove round plain nut (2) or (3).



- 5 If removed, install lubrication fitting (6).
- 6 Put sleeve bushing (7) onto traversing nut (1). Using 31mm spanner wrench, screw on round plain nut (2) to assembled position. Apply thread locking compound (item 25, app D) and secure with setscrew (8) using 1.27mm key wrench.
- 7 Install assembled traversing nut (1) and sleeve bushing (7) into traversing gear housing assembly (9), with groove of sleeve bushing aligned with setscrew hole on traversing gear housing assembly. Apply thread locking compound (item 25, app D) and install setscrew (10), using 2.5mm key wrench. To ensure smooth movement of sleeve bushing, tighten setscrew, release 1/4 turn, and lock with hexagon plain nut (11) using 8mm wrench.
- 8 Put sleeve bushing (12) through end of traversing gear housing assembly (9) onto traversing nut (1). Screw on round plain nut (3) to assembled position and secure with setscrew (13). Apply thread locking compound (item 25, app D) and secure traversing nut in traversing gear housing assembly with setscrew (14), using 2.5mm key wrench. To ensure smooth movement of sleeve bushing, tighten setscrew, release 1/4 turn, and lock with hexagon plain nut (15) using 8mm wrench. Check sleeve bushings (7) and (12) for free movement in traversing gear housing assembly.



- 9 Install traversing screw (16) into traversing nut (1). Check for the extent of free movement. The maximum longitudinal free play should not exceed 0.012 in. (0.305 mm). Apply thread locking compound (item 25, app D) to round plain nut (17) and machine bushing (18). Install machine bushing and round plain nut. Tighten using 34mm spanner wrench. Release 1/4 turn and adjust machine bushing until end play is eliminated. Secure round plain nut using 45/50 hook wrench. The maximum allowed backlash for the traversing screw is 1/8 turn (45 degrees).
- 10 Install flat washer (19), two spring tension washers (20), beveled washer (21) (bevel side towards hand crank), hand crank (22), and flat washer (23). Secure with new self-locking nut (24) using 13mm wrench. Adjust to permit free rotation with no end play.

TEST

Turn hand crank in both directions. Check for free movement. Backlash should not exceed 1/8 turn of crank (45 degrees).

3-14. TRAVERSING EXTENSION ASSEMBLY.

This task covers:

- a. Disassembly
- b. Inspection/Repair
- c. Lubrication
- d. Reassembly
- e. Test

INITIAL SETUP

Tools/Special Tools

Drill, 3mm, B94.11M
 Small Arms Shop Set: Field Maintenance, Basic, Less Power
 (SC 4933-95-CL-A11)
 Wrench, key, 6mm, ANSI-B18.3.2M
 Wrench, spanner, 4mm, 12577336

Materials/Parts

GA grease (item 11, app D)
 GPL lubricating oil (item 12, app D)

Spring pin, 93-405
 Thread locking compound (item 25, app D)

Equipment Condition

Traversing extension assembly installed on traversing gear assembly with elevating mechanism removed (p 3-8)

DISASSEMBLY

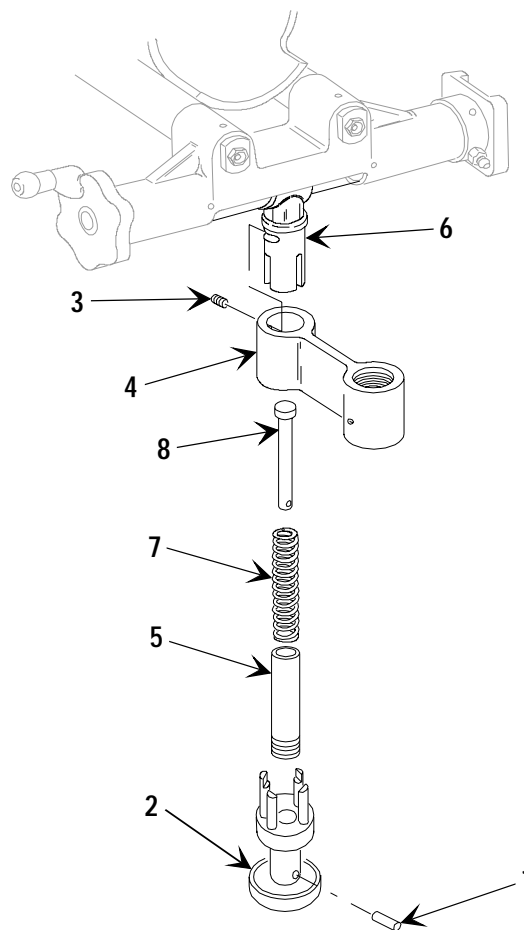
WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

CAUTION

- Parts were drilled for straight pins and setscrews when they were assembled. To line up holes for pins or screws, parts must be put back exactly as they were assembled. Mark before disassembly.
- Suddenly released springs may cause lost parts.

- 1 Remove spring pin (1) and pull out knob (2). Discard spring pin.



- 2 Using 6mm key wrench, loosen and remove setscrew (3). Pull off traversing extension housing (4). Using 4mm spanner wrench, remove helical compression spring retainer (5) from traversing nut (6) and pull out helical compression spring (7) and headed straight pin (8).

INSPECTION/REPAIR

Inspect for wear, burrs, cracks, and corrosion. Replace damaged or defective items as authorized by Repair Parts and Special Tools List, appendix C.

LUBRICATION

Apply GA grease (item 11, app D) to traversing extension housing, helical compression spring, and headed straight pin. Apply GPL (item 12, app D) to all unpainted surfaces.

REASSEMBLY

- 1 Install headed straight pin (1), helical compression spring (2), and helical compression spring retainer (3) into traversing nut (4) using 4mm spanner wrench.

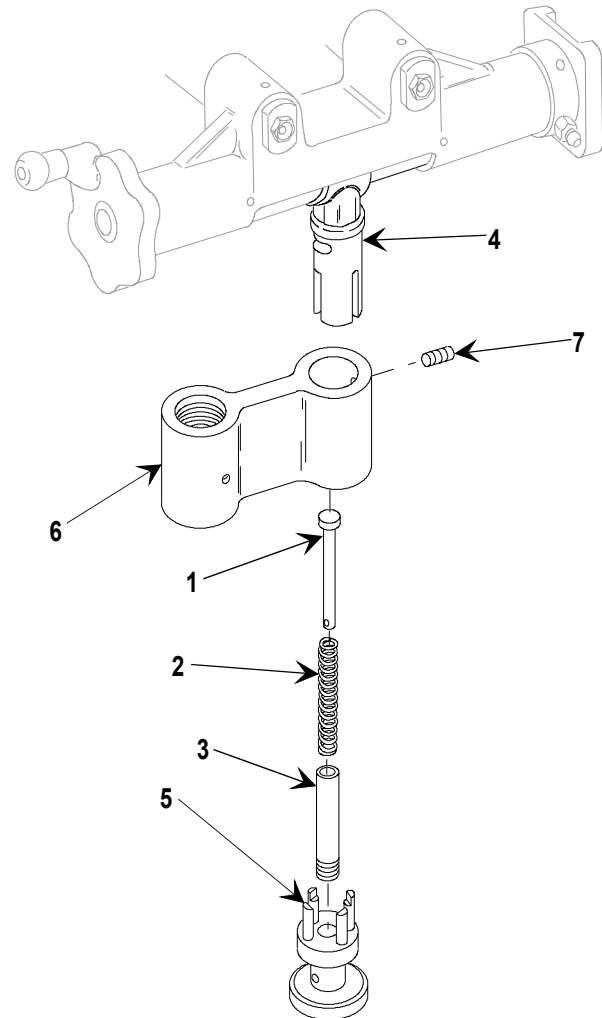
WARNING

Flying metal chips may cause injury to you or other workers nearby. Anytime metal strikes metal (hammer, punch, or pin), chips may fly. Protect others with screens. Wear eye protection and be careful.

NOTE

If knob (5) is new, perform steps 2, 3, and 5. If knob is original component part, perform steps 4 and 5.

- 2 Install traversing extension housing (6) onto traversing nut (4). Apply thread locking compound (item 25, app D) and secure with setscrew (7) using 6mm key wrench.
- 3 Install knob (5) to assembled position. Drill 3mm hole in knob. Remove knob.



3-14. TRAVERSING EXTENSION ASSEMBLY (Cont).

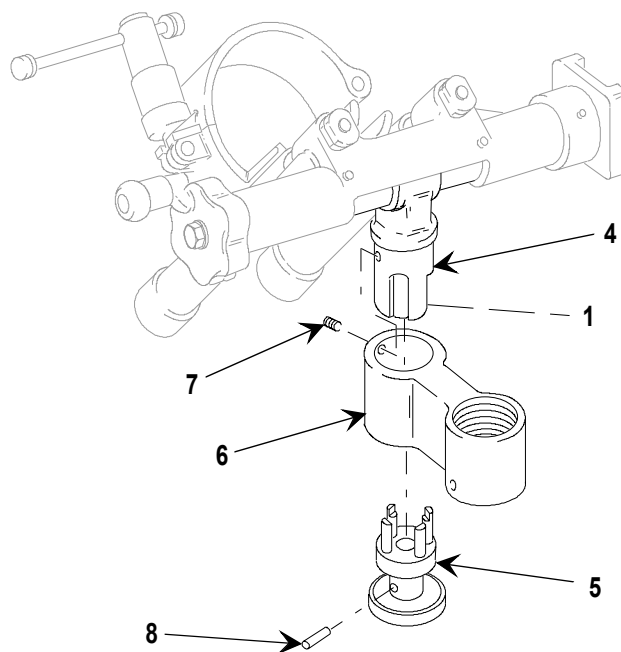
REASSEMBLY (Cont)

- 4 Install traversing extension housing (6) onto traversing nut (4). Apply thread locking compound (item 25, app D) and secure with setscrew (7) using 6mm key wrench.

NOTE

Before installing spring pin, ensure holes in headed straight pin (1) and knob (5) align.

- 5 Install knob (5) and secure with new spring pin (8).



TEST

Check for smooth movement of knob up and down. Check proper engagement of knob in all three positions.

Section IV. PREEMBARKATION INSPECTION OF MATERIEL IN UNITS ALERTED FOR OVERSEAS MOVEMENT

3-15. PREEMBARKATION INSPECTION OF MATERIEL IN UNITS ALERTED FOR OVERSEAS MOVEMENT.

a. General. This inspection is conducted on materiel in alerted units scheduled for overseas duty to be sure that such materiel will not become unserviceable in a relatively short time. It prescribes a higher percentage of remaining usable life in serviceable materiel to meet a specific need beyond minimum serviceability.

b. Preinspection Points.

WARNING

Before starting an inspection, be sure to clear the weapon. Inspect the bore to be sure it is empty and free from obstruction.

(1) Equipment must be considered “ready” under the criteria established in the Preventive Maintenance Checks and Services (PMCS) section of TM 9-1015-250-10.

(2) Operator publications applicable to the equipment log book must accompany the equipment. All log book entries must be complete and up-to-date, including those covering any repairs, replacements, or adjustment.

(3) Weapons must be complete with all items required by applicable Department of the Army publications, including those in the basic issue items list of TM 9-1015-250-10.

(4) Disqualified weapons and/or fire control equipment which do not qualify for shipment or issue will either be redistributed, repaired, overhauled, or will become a candidate for cannibalization or other disposition as required by existing regulations.

c. Inspection Points.

(1) Care must be exercised to use tools that are suitable for the task to be performed in order to avoid unnecessary mutilation of parts and/or damage to tools.

(2) Damaged threads should be repaired by using a thread restorer or by lathe-chasing and by replacing helical inserts.

(3) Damaged surfaces should be restored using materials and tools consistent with tolerances of item being restored.

(a) There are various methods and materials used for removing corrosion. These should be carefully selected in order that surfaces being processed will not be damaged beyond serviceability.

(b) Crocus cloth and fine stones should be used to remove corrosion, burrs, and scores from polished surfaces. Aluminum oxide abrasive cloth, files, or scrapers are permissible where critical dimensions will not be altered by their use.

(4) Safety mechanism must function positively. When in the S position, the weapon must not fire.

(5) All markings must be legible.

(6) Complete disassembly of a unit is not always necessary in order to make a required repair or replacement. Good judgment should be exercised to keep disassembly and assembly to a minimum.

(7) Exercise caution when removing and installing spring and headless grooved pins to prevent damage to the mechanism or component.

(8) When assembling a unit, replace all spring and headless grooved pins with new pins. Self-locking screws and nuts must be replaced if they were removed.

(9) Springs that are kinked and/or fail to function properly must be replaced.

(10) During repair the material should be kept clean and lubricated before functioning or testing. Do not over-lubricate. Use as little lubricant as necessary for proper functioning.

3-15. PREEMBARKATION INSPECTION OF MATERIEL IN UNITS ALERTED FOR OVERSEAS MOVEMENT (Cont).

d. Specific Criteria.

(1) **Surfaces.** A worn or shiny surface is objectionable from the standpoint of visibility when it is capable of reflecting light as a mirror does. A weapon with a distinct shine on exterior parts will be rejected for overseas shipment.

(2) M298 120mm Cannon.

(a) Inspect the cannon tube in accordance with TM 9-1000-202-14.

(b) The cannon tube must have an inside bore diameter between 4.747 in. (120.57 mm) and 4.757 in. (120.83 mm) to be acceptable for overseas shipment.

(c) Breech assembly must be free of burrs that interfere with assembly to the socket and must be gastight on the cannon tube.

(d) Firing pin must function properly.

(3) M190/M191 Mortar Mount.

(a) All movable elements must perform smoothly without binding.

(b) Elevating, cross leveling, and traversing assemblies which bind are not acceptable.

(4) M9 Mortar Baseplate.

(a) M9 mortar baseplate must not be cracked. Minor bends are acceptable.

(b) Install M298 120mm cannon to M9 mortar baseplate. Check clearance and ease of function.

(5) M1100 120mm Mortar Trailer.

(a) Inspect the tools in accessories stowage box.

(b) Check pneumatic tire wheels and hub assemblies.

APPENDIX A

REFERENCES

A-1. SCOPE. This appendix lists all forms, supply catalogs, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS.

DA Form 2028.....	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2404.....	Equipment Inspection and Maintenance Worksheet
DA Form 2408-4	Weapons Record Data
DA Form 2408-9	Equipment Control Record
SF 364	Report of Discrepancy (ROD)
SF 368	Product Quality Deficiency Report

A-3. SUPPLY CATALOGS.

SC 4933-95-CL-A11.....	Small Arms Shop Set: Field Maintenance, Basic, Less Power
SC 5180-90-CL-N26.....	General Mechanic's Automotive Tool Kit
SC 5180-95-CL-A07.....	Small Arms Repairman Tool Kit

A-4. TECHNICAL MANUALS.

TM 9-243	Use and Care of Hand Tools and Measuring Tools
TM 9-254	General Maintenance Procedures for Fire Control Materiel
TM 9-1000-202-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual for Evaluation of Cannon Tubes
TM 9-1015-250-10	Operator's Manual for Mortar, 120mm: Towed M120 and Mortar, 120mm: Carrier-mounted M121
TM 9-1015-254-13&P	Operator's, Unit, and Direct Support Maintenance Manual with Repair Parts and Special Tools List for Mortar, Subcaliber Insert: M303
TM 9-1240-278-24&P	Organizational, Direct Support, and General Support Maintenance and Repair Parts and Special Tools List for Optical Boresight, M45, W/E
TM 9-1240-409-24&P	Unit, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List (Including Depot Repair Parts) for M67 Sight Unit
TM 9-2610-200-24	Organizational, Direct Support, and General Support Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes

A-4. TECHNICAL MANUALS (Cont).

TM 9-6650-235-13&P	Operator's, Unit, and Direct Support Maintenance Manual (Including Repair Parts) Borescope, M3
TM 43-0139	Painting Instructions for Army Materiel
TM 750-244-7	Procedures for Destruction of Equipment in Federal Supply Classifications 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1055, 1090 and 1095 to Prevent Enemy Use

A-5. OTHER PUBLICATIONS.

AR 750-1	Army Materiel Maintenance Policies
CTA 8-100	Army Medical Department Expendable/Durable Items
CTA 50-970	Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)
DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 738-750	The Army Maintenance Management System (TAMMS)
FM 9-207	Operation and Maintenance of Ordnance Materiel in Cold Weather (0 Degrees to Minus 65 Degrees F)
■ FM 4-25.11	First Aid
■ FM 23-90	Mortars
■ TB 9-1000-247-34	Standards for Overseas Shipment of Small Arms, Aircraft Armament, Towed Howitzers, Mortars, Recoilless Rifles, Rocket Launchers, and Associated Fire Control Equipment

APPENDIX B

MAINTENANCE ALLOCATION CHART (MAC)

Section I. INTRODUCTION

B-1. THE ARMY MAINTENANCE SYSTEM MAC.

a. This introduction (section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Field - Includes two subcolumns, Unit (C (Operator/Crew) and O (Unit)) maintenance and Direct Support (F) maintenance.

Sustainment - Includes two subcolumns, General Support (H) maintenance and Depot (D) maintenance.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions are limited to and defined as follows: (except for ammunition MAC¹).

a. **Inspect.** To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. **Test.** To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item/end item and comparing those characteristics with prescribed standards.

c. **Service.** Operations required periodically to keep an item in proper operating condition: e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

¹Exception is authorized for ammunition MAC to permit the redesignation/redefinition of maintenance function headings to more adequately identify ammunition maintenance functions. The heading designations and definitions will be included in the appropriate technical manual for each category of ammunition.

B-2. MAINTENANCE FUNCTIONS (Cont).

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services² including fault location/troubleshooting³, removal/installation, and disassembly/assembly⁴ procedures, and maintenance actions⁵ to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

²Services - Inspect, test, service, adjust, align, calibrate, and/or replace.

³Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

⁴Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

⁵Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as man-hours in whole hours or decimals) in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work-time figures are shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (condition/follow-on tasks) (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

NOTE

When a complete replace or repair task performed at higher level maintenance includes lower level maintenance tasks (equipment condition/follow-on tasks), the lower level work time figures in the MAC must be added to the higher level work time shown in the MAC to determine the total to accomplish that maintenance function.

Field:

C	Operator or Crew maintenance
O	Unit maintenance
F	Direct Support maintenance

Sustainment:

L	Specialized Repair Activity (SRA) ⁶
H	General Support maintenance
D	Depot maintenance

e. Column 5, Tools and Test Equipment reference code. Column 5 specifies, by code, those common tool sets (not individual tools), common TMDE, and special tools, special TMDE, and special support equipment required to perform the designated functions. Codes are keyed to tools and test equipment in section III.

f. Column 6, Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in section IV.

⁶This maintenance level is not included in Section II, column (4) of the Maintenance Allocation Chart. Functions to this level of maintenance are identified by a work-time figure in the "H" column of Section II, column (4), and an associated reference code is used in the Remarks column (6). This code is keyed to Section IV, Remarks, and the SRA complete repair application is explained there.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number, model number, or type number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Remarks Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column, along with the related codes, should be used to clarify maintenance and inspection functions by different MOS' involved in maintaining some components.

Section II. MAINTENANCE ALLOCATION CHART FOR M120/M121 MORTAR

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip- ment Ref Code	(6) Remarks Code
			Field		Sustainment				
			Unit		DS	GS	Depot		
			C	O	F	H	D		
00	M120/M121 120mm Mortar 12576880 & 12900890	Inspect Service	0.3 1.0	0.3 1.0	0.3 8.0			29,30	A,E
01	M298 120mm Cannon 12901195	Inspect Service Replace Overhaul	0.2 0.5	0.2 1.5	1.0		2.0	1,4,8, 28,29, 30,43, 53	
0101	Breech Cap Assembly 12901190	Inspect Repair Overhaul	0.2 0.3	0.2	0.2		2.0	8,22,28, 30,43	
02	M190/M191 Mortar Mount 12576999 & 12901000	Inspect Service Replace Repair Overhaul	0.3	0.3 0.4 0.1	0.3 16.5 4.0		8.0	11,29, 30,38, 63	
0201	M190/M191 Bipod Leg Assembly 12577000 & 12900891	Inspect Service Replace Repair	0.1	0.1 0.3 0.4	0.1 0.3 0.8			29,30	
020101	Chain Assem- bly 12901120	Inspect Replace Repair		0.1 0.2 0.2				30	
020102	Bipod Leg Extension Assembly 12900904	Inspect Replace Repair		0.1 0.3 0.3				30	
02010201	Chain Assem- bly 12901120	Inspect Replace Repair		0.1 0.2 0.2				30	

Section II. MAINTENANCE ALLOCATION CHART FOR M120/M121 MORTAR (Cont)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip- ment Ref Code	(6) Remarks Code
			Field		Sustainment				
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0202	M120/M121 Elevating Mechanism 12577061 & 12900901	Inspect Service Replace Repair Adjust	0.2 0.1	0.2 0.1	0.2 1.0 3.0 0.4			3,5,1, 6.1,7,11, 12,13, 14,15, 16,17, 18,23, 27,29, 32,33, 34,38, 40,46, 47,50, 51,52, 60,62, 63	
0203	Cross Leveling Mechanism 12577039	Inspect Service Replace Repair Adjust	0.1 0.1	0.1 0.1	0.1 0.5 1.5 0.3			5,7,20, 25,26, 29,32, 39,44, 49,59	
0204	Buffer Mechanism 12577113	Inspect Replace Repair Adjust	0.1	0.1	0.1 0.5 2.0 0.2			7,10, 29,34, 37,39, 41,42, 52,55, 56	
020401	Buffer Housing Assembly 12577118	Inspect Replace Repair	0.1	0.1	0.1 0.5 1.8			29	
020402	Clamp Handle Assembly 12577119	Inspect Test Replace Repair	0.1	0.1	0.1 0.2 0.1 0.8			2,3,21, 29,33, 51,64	

Section II. MAINTENANCE ALLOCATION CHART FOR M120/M121 MORTAR (Cont)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip- ment Ref Code	(6) Remarks Code
			Field			Sustainment			
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0205	Traversing Gear Assembly 12577019	Inspect Service Replace Repair Adjust	0.1	0.2 0.2	0.2 1.0 2.0 0.3			3,6,19, 24,29, 31,36, 37,45, 48,51, 58,59	
020501	Sightunit Adapter Cover 12576976	Inspect Replace Repair	0.1 0.1	0.2				30	
020502	Traversing Gear Housing Assembly 12901123	Inspect Replace Repair	0.1	0.1	0.1 1.0		2.5	29	
0206	Traversing Extension Assembly 12901124	Inspect Replace Repair	0.1	0.1	0.2 0.3 1.0			6,29,54, 61	
03	M1100 120mm Mortar Trailer 12577141	Inspect Service Replace Repair Overhaul	0.5 0.3	0.5 0.4 0.2 2.5			8.0	9,57	
0301	Muzzle Plug Assembly 12577270	Inspect Replace Repair	0.1	0.1 0.1 0.2				9	
0302	Pneumatic Tire Wheel 12577174	Inspect Service Replace Repair	0.1 0.2	0.5 0.1 0.2 1.0				9	F

Section II. MAINTENANCE ALLOCATION CHART FOR M120/M121 MORTAR (Cont)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip- ment Ref Code	(6) Remarks Code
			Field		Sustainment				
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0303	Trailer Bridge Assembly 12577241	Inspect Service Replace Repair	0.1	0.1 0.1 0.3 0.5				9	
030301	Lock Release Lever 12577246	Inspect Service Replace Repair	0.1	0.1 0.1 0.2 0.3				9	
0304	Torsion Bar Assembly 12577288	Inspect Service Replace Repair Overhaul	0.2 0.3	0.2 1.0 0.5 1.0			2.0	9	
0305	Electrical Wiring Assembly 12577304	Inspect Test Replace Repair	0.1	0.2 0.1 1.4 1.0				9	
030501	Stoplight- Taillight Assembly MS51329-1	Inspect Test Replace Repair	0.1	0.1 0.1 0.5 0.5				9	
0306	Safety Chain Assembly 12901163	Inspect Replace Repair	0.1	0.1 0.5 0.3				9	
0307	Driver's Vision Device 12901070	Inspect Replace Repair	0.1	0.1 0.2 0.1				9	
04	Blast Attenu- ator Assembly 12901012	Inspect Replace Repair	0.1	0.1 0.2 0.3				30	

Section II. MAINTENANCE ALLOCATION CHART FOR M120/M121 MORTAR (Cont)

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equip- ment Ref Code	(6) Remarks Code
			Field		Sustainment				
			Unit		DS	GS	Depot		
			C	O	F	H	D		
0401	Cone Assembly 12901101	Inspect Replace Repair	0.1	0.1 0.1				30	
05	Basic Issue Items (Repair Parts)	Inspect Service Replace Repair	0.1 0.2 0.2	0.1 0.2					
0501	Artillery Cleaning Staff Assembly 12576922	Inspect Service Replace Repair	0.1 0.2 0.2	0.1 0.3				30	
050101	Cleaning Staff Section 12577325	Inspect Replace Repair		0.1 0.3 0.3				30	
050102	Manual Control Handle 12577326	Inspect Replace Repair		0.1 0.3 0.3				30	
050103	Cleaning Staff Section 12577324	Inspect Replace Repair		0.1 0.3 0.3				30	
0502	Cartridge Extractor 12901148	Inspect Service Replace Repair	0.1 0.1 0.2	0.1 0.1 0.3				30	
06	M67 Sight Unit 9356182	Inspect Service Repair	0.2	0.2	0.2 0.2 0.1			30	C
07	M45/M45A1 Boresight	Inspect Service Repair	0.1 0.1	0.1		1.0			D

Section III. TOOLS AND TEST EQUIPMENT FOR M120/M121 MORTAR

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
1	F	Accessory Outfit for Pullover Gages	4933-00-348-8652	SC 4931-95-A12
2	F	Adapter, Torque Wrench	5120-01-286-0472	12577342
3	F	Block, Depth	5210-01-388-3740	12901137
4	F	Borescope: Cannon Bore Inspecting, M3	6650-01-063-0035	11584701
5	F	Countersink, 90-degree	5133-00-293-1903	GGG-C-613
5.1	F	Direct Support Parts Kit, Semiannual Service	1015-01-452-9634	5911365
6	F	Drill, 2mm	5133-01-115-7994	ANSI-B94.11M
6.1	F	Drill, 3mm	5133-01-116-0621	ANSI-B94.11M
7	F	Drill, 4mm	5133-01-113-6299	ANSI-B94.11M
8	C	Gage, Firing Pin	1015-01-406-9349	12901151
9	O	General Mechanic's Automotive Tool Kit	5180-00-177-7033	SC 5180-90-N26
10	F	Guide, Drill	5120-01-388-8346	12901135
11	F	Guide, Drill	5120-01-388-1762	12901136
12	F	Guide, Drill	5120-01-335-5062	12944228
13	F	Guide, Drill	5120-01-335-5064	12944229
14	F	Guide, Drill	5120-01-335-5063	12944230
15	F	Guide, Drill	5120-01-333-2387	12944231
16	F	Guide, Drill	5120-01-333-2390	12944232
17	F	Guide, Drill	5120-01-333-2392	12944233

Section III. TOOLS AND TEST EQUIPMENT FOR M120/M121 MORTAR (Cont)

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
18	F	Guide, Drill	5120-01-333-2389	12944234
19	F	Guide, Drill	5120-01-333-2394	12944235
20	F	Guide, Drill	5120-01-333-2391	12944236
21	F	Guide, Drill	5120-01-333-2388	12944237
22	C	Hammer, Hand, 2 lb	5120-00-061-8546	11677028-3
23	F	Jaw Adapter	1015-01-286-0435	12577339
24	F	Jaw Adapter	1015-01-286-0436	12577340
25	F	Jaw Adapter	1015-01-286-0437	12577341
26	F	Reamer, Hand, 4mm	5110-01-390-7553	12901130
27	F	Reamer, Hand, 6mm	5110-01-390-9712	12901131
28	C	Removal Tool, Breech Cap	5120-01-407-8044	12901153
29	F	Shop Set, Small Arms: Field Maintenance, Basic, Less Power	4933-00-754-0664	SC 4933-95-A11
30	O	Small Arms Repairman Tool Kit	5180-00-357-7770	SC 5180-95-A07
31	F	Tap, 2.5mm	5136-00-236-4330	ANSI-B94.9
32	F	Tap, 4mm	5136-00-223-6253	ANSI-B94.9
33	F	Tap, 5mm	5136-00-236-4322	ANSI-B94.9
34	F	Tap, 6mm	5136-00-236-4317	ANSI-B94.9-1987
35	F	Tool Bag	8105-01-326-0075	12577466

Section III. TOOLS AND TEST EQUIPMENT FOR M120/M121 MORTAR (Cont)

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
36	F	Wrench, 8mm	5120-01-113-9560	ANSI B107.9-1978
37	F	Wrench, 11mm/13mm	5120-01-102-5973	ANSI B107.9-1978
38	F	Wrench, 16mm	5120-01-054-7134	ANSI-B107.9
39	F	Wrench, 19mm	5120-01-111-5305	B107.9
40	F	Wrench, 24mm	5120-01-113-9563	ANSI-B107.9
41	F	Wrench, Box (38mm)	5120-01-286-0457	12577343
42	F	Wrench, Box (32mm)	5120-01-286-0462	12577348
43	C	Wrench, Firing Pin	5120-01-299-5989	12901194
44	F	Wrench, Hook (40/42)	5120-01-333-9796	12577461
45	F	Wrench, Hook (45/50)	5120-01-333-9797	12577462
46	F	Wrench, Hook (52/55)	5120-01-333-9798	12577463
47	F	Wrench, Hook (58/62)	5120-01-333-9799	12577464
48	F	Wrench, Key, 1.27mm	5120-00-198-5401	GGG-K-275
49	F	Wrench, Key, 1.5mm	5120-01-079-8020	B18.3.2M
50	F	Wrench, Key, 2mm	5120-01-045-4886	B18.3.2M
51	F	Wrench, Key, 2.5mm	5120-01-045-4887	ANSI-B18.3.2M
52	F	Wrench, Key, 3mm	5120-01-045-4888	ANSI-B18.3.2M
53	F	Wrench, Key, 5mm	5120-00-900-9344	GGG-K-275

Section III. TOOLS AND TEST EQUIPMENT FOR M120/M121 MORTAR (Cont)

Tool or Test Equipment Ref Code	Maintenance Level	Nomenclature	National Stock Number	Tool Number
54	F	Wrench, Key, 6mm	5120-00-900-9345	ANSI-B18.3.2M
55	F	Wrench, Retainer	5120-01-389-5477	12901134
56	F	Wrench, Retainer	5120-01-332-7643	12944242
57	C	Wrench, Socket	5120-01-299-8777	12576996
58	F	Wrench, Spanner	5120-01-286-0455	12577337
59	F	Wrench, Spanner	5120-01-286-0456	12577338
60	F	Wrench, Spanner	5120-01-286-0460	12577346
61	F	Wrench, Spanner	5120-01-286-0454	12577336
62	F	Wrench, Spanner	5120-01-286-0458	12577344
63	F	Wrench, Spanner, Adjustable	5120-01-333-9794	12576998
64	F	Wrench, Torque	5120-01-355-1736	12901100

Section IV. REMARKS FOR M120/M121 MORTAR

Remarks Code	Remarks
A	Refer to TM 9-1000-202-14
B	Refer to TM 9-254
C	Refer to TM 9-1240-409-24&P
D	Refer to TM 9-1240-278-24&P
E	Refer to TM 9-6650-235-13&P
F	Refer to TM 9-2610-200-24

APPENDIX C

UNIT AND DIRECT SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST (INCLUDING DEPOT REPAIR PARTS)

Section I. INTRODUCTION

C-1. SCOPE. This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the M120/M121 mortar. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

C-2. GENERAL. In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG. BULK at the end of the section. Repair parts kits are listed separately in their own functional group within Section II. Repair parts for repairable special tools are also listed in section II. Items listed are shown on the associated illustration.

b. Section III. Special Tools List. A list of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE (UOC) column).

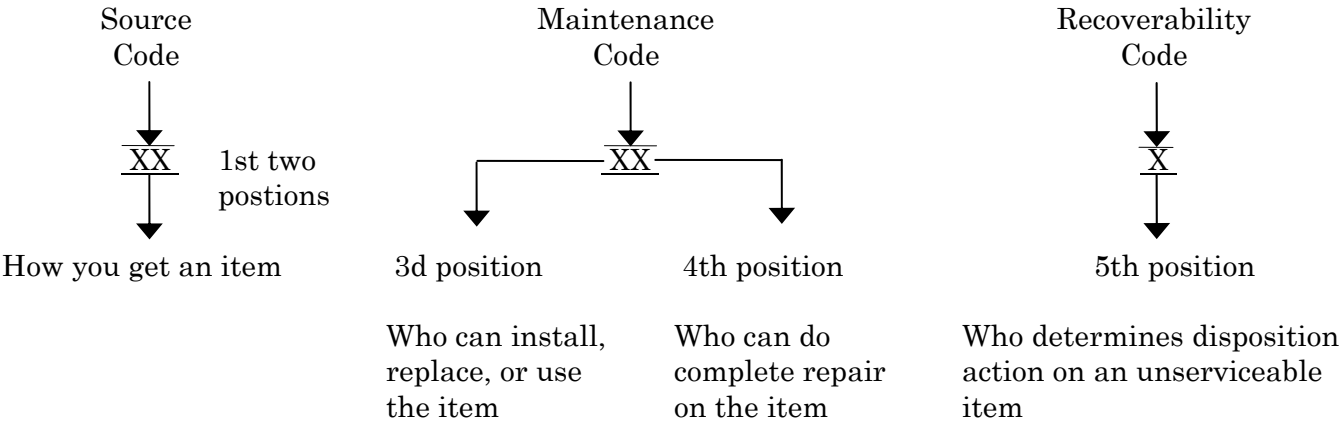
c. Section IV. Cross-reference Indexes. There are two cross-reference indexes in this RPSTL: The National Stock Number Index and the Part Number Index. The National Stock Number Index refers you to the figure and item number. The Part Number Index refers you to the figure and item number.

C-3. EXPLANATION OF COLUMNS (SECTION II AND III).

a. ITEM NO. (Column (1)). Indicates the number used to identify items called out on the illustration.

C-3. EXPLANATION OF COLUMNS (SECTION II AND III) (Cont).

b. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code contains supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:



NOTE

Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

(1) Source Code. The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items: use the applicable NSN to requisition/ request items with these source codes. They are authorized to the level indicated by the code entered in the 3d position of the SMR code.
NOTE Items coded PC are subject to deterioration.	
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.

Source Code

Application/Explanation

MO - Made at unit/
AVUM level
MF - Made at DS/
AVIM level
MH- Made at GS
level
ML - Made at SRA
MD - Made at depot

Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group of the repair parts list of the RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.

AO - Assembled by
unit/AVUM level
AF - Assembled by
DS/AVIM level
AH- Assembled by
GS level
AL - Assembled by
SRA
AD- Assembled by
depot

Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.

- XA - Do not requisition an "XA"-coded item. Order the next higher assembly. (Refer to NOTE below.)
- XB - If an "XB"-coded item is not available from salvage, order it using the CAGEC and part number.
- XC - Installation drawing, diagrams, instruction sheet, field service drawing; identified by manufacturer's part number.
- XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGEC and part number, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

C-3. EXPLANATION OF COLUMNS (SECTION II AND III) (Cont).**Maintenance****Code****Application/Explanation**

C	Crew or operator maintenance done within unit/AVUM maintenance.
O	Unit level/AVUM maintenance can remove, replace and use the item.
F	Direct support/AVIM maintenance can remove, replace, and use the item.
H	General support maintenance can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot can remove, replace, and use the item.

(b) The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the maintenance allocation chart and SMR codes.

This position will contain one of the following maintenance codes:

Maintenance**Code****Application/Explanation**

O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct support/AVIM is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are authorized for maintenance of "B" coded items.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of the SMR code.
O	Repairable item. When uneconomically repairable, condemn and dispose of the item at unit or aviation unit level.
F	Repairable item. When uneconomically repairable, condemn and dispose of the item at direct support or aviation intermediate level.
H	Repairable item. When uneconomically repairable, condemn and dispose of the item at general support level.
D	Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L	Repairable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical materiel, or hazardous materiel). Refer to appropriate manuals/directives for specific instructions.

c. NSN (Column (3)). The national stock number for the item is listed in this column.

d. CAGEC (Column (4)). The Contractor and Government Entity Code (CAGEC) is a 5-digit alphanumeric code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

e. PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

C-3. EXPLANATION OF COLUMNS (SECTION II AND III) (Cont).

f. DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Part numbers of bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(3) The statement "END OF FIGURE" appears just below the last item description in Column (6) for a given figure in both sections II and III.

g. QTY (Column (7)). The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

C-4. EXPLANATION OF INDEX FORMAT AND COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) **STOCK NUMBER column.** This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN

(e.g., 5305-01-674-1467). When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning items by stock number.

(2) **FIG. column.** This column lists the number of the figure where the item is identified/located. The figures are in numerical order in sections II and III.

(3) **ITEM column.** The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. PART NUMBER INDEX. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A thru Z, followed by the numbers 0 thru 9 and each following letter or digit in like order).

(1) **PART NUMBER column.** Indicates the part number assigned to the item.

(2) **FIG. column.** This column lists the number of the figure where the item is identified/located in section II or III.

(3) **ITEM column.** The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

C-5. SPECIAL INFORMATION.

a. USABLE ON CODE. The codes listed below appear in this RPSTL.

Usable on Code	Equipment
AD5	Towed M120 120MM Mortar
AD7	Carrier-Mounted M121 120MM Mortar
AJ8	M1100 120MM Mortar Trailer

b. FABRICATION INSTRUCTIONS. Not applicable.

c. ASSEMBLY INSTRUCTIONS. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in this appendix. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. KITS. Not applicable.

e. INDEX NUMBERS. The item numbers and part numbers are cross-referenced to the National Stock Number/Part Number Index in Section IV.

f. ASSOCIATED PUBLICATIONS. The publications listed below pertain to M120/M121 120mm mortar and its components.

Publication	Short Title
TM 9-254	General Maintenance Procedures for Fire Control Materiel
TM 9-1000-202-14	Maintenance Manual for Evaluation of Cannon Tubes
TM 9-1240-278-24&P	Maintenance & Repair Parts for Optical Boresight, M45
TM 9-1240-287-34&P	Maintenance Manual: Sightunit M53
TM 9-1240-409-24&P	Maintenance Manual: M67 Sight Unit
TM 9-2610-200-24	Care, Maintenance and Repair of Pneumatic Tires and Inner Tubes
TM 9-4933-258-13&P	Pullover Gage Kit
TM 9-6650-235-13&P	Operator's, Unit, and Direct Support Maintenance Manual for Borescope, M3

g. ILLUSTRATIONS - LISTING. All parts are listed in the tabular listing and appear in this RPSTL.

C-6. HOW TO LOCATE REPAIR PARTS.

a. When National Stock Number or Part Number is Not Known.

(1) First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) Second. Find the figure covering the assembly group or subassembly group to which the item belongs.

C-6. HOW TO LOCATE REPAIR PARTS (Cont).

(3) Third. Identify the item on the figure and note the item number.

(4) Fourth. Look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

b. When National Stock Number or Part Number is Known.

(1) First. If you have the National Stock Number, look in the STOCK NUMBER column of the National Stock Number Index. The NSN index is arranged in National Item Identification Number (NIIN) sequence (see paragraph C-4a). Note the figure and item number next to the NSN.

(2) Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

NOTE

If you have the part number, look in the PART NUMBER column of the part number index. Identify the figure and item number. Look up the item on the figure in section II.

C-7. ABBREVIATIONS. Not applicable.

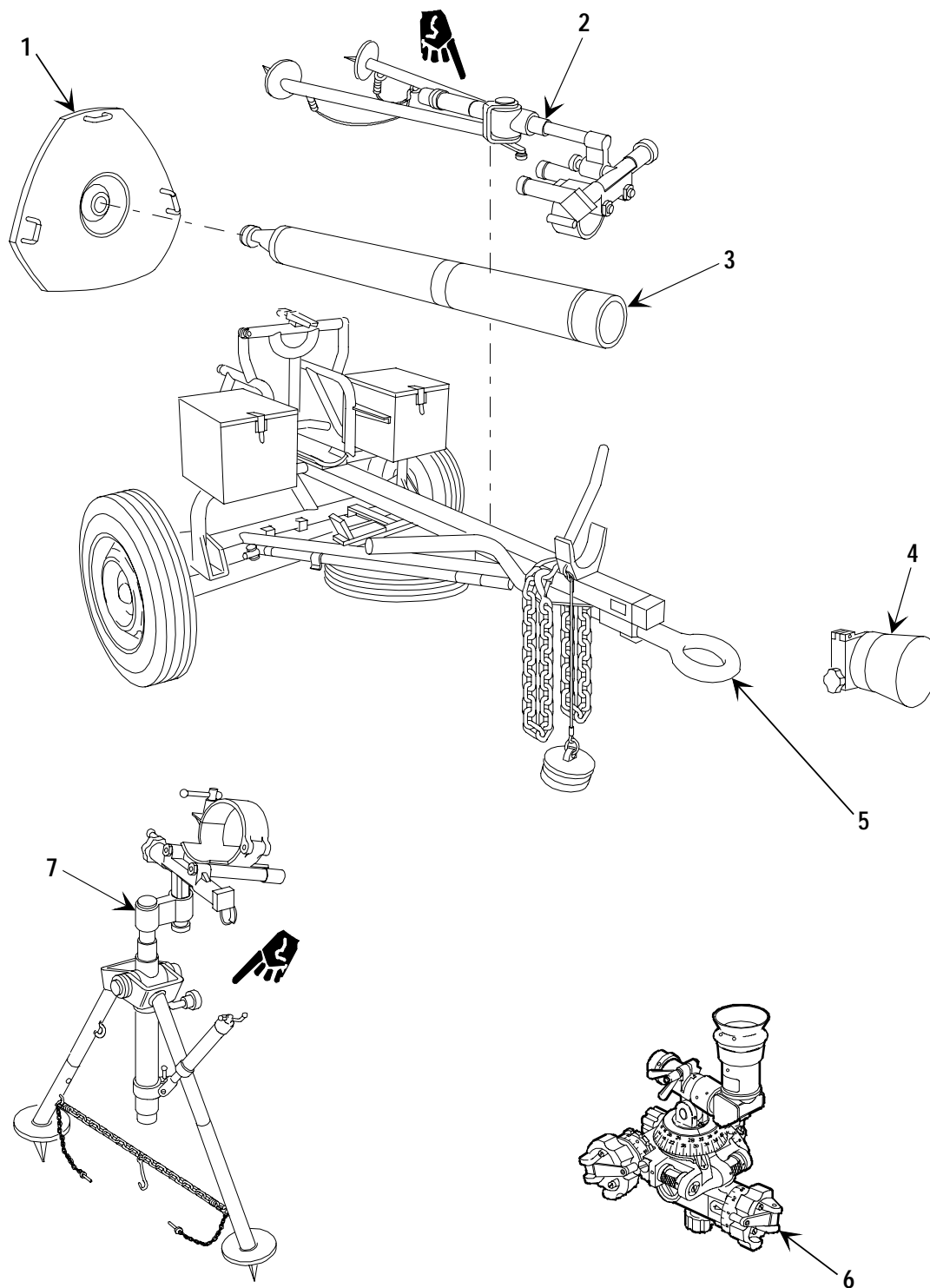


Figure C-1. M120/M121 Mortar, 120MM 12576880 and 12900890.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-1 GROUP 00 AND 06 M120/M121, MORTAR, 120MM 12576880 AND 12900890 AND M67 SIGHT UNIT 9356182	
1	PAOZA	1015-01-285-7417	19206	12576881	BASEPLATE,MORTAR:M9.....	1
					UOC:AD5,AD7	
*2	PAOFF	1015-01-521-1617	19206	12576999	MOUNT,MORTAR:M190 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-4)	1
					UOC:AD5	
*3	PAODD	1015-01-522-2630	1NUW7	12901195	CANNON,120MM:M298 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-2)	1
					UOC:AD5,AD7	
4	PAOOO	1015-01-354-2152	19206	12901012	BLAST ATTENUATOR ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-25)	1
					UOC:AD7	
5	PEOOO		19206	12577141	TRAILER,MORTAR,120MM: M1100 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-15)	1
					UOC:AJ8	
6	AOOOO	1240-01-366-7322	19200	9356182	SIGHT UNIT,M67 (FOR ASSEMBLY BREAKDOWN SEE TM 9-1240-409-24&P).....	1
					UOC:AD5,AD7	
*7	PAOFF	1015-01-521-1616	19206	12901000	MOUNT,MORTAR:M191 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-4)	1
					UOC:AD5,AD7	

END OF FIGURE

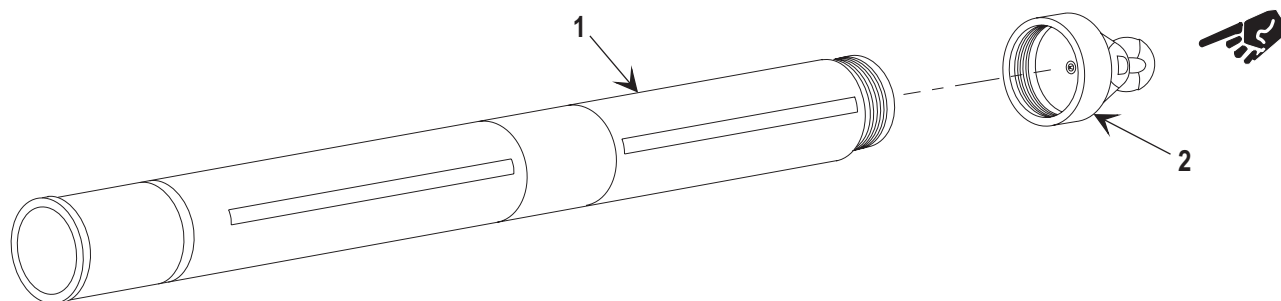


Figure C-2. Cannon, 120MM, M298 12901195.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-2 GROUP 01 CANNON, 120MM, M298 12577298-1	
1	XAFZA		19206	12577299-1	TUBE,CANNON..... UOC:AD5,AD7	1
*2	XAODD		1NUW7	12901190	BREECH ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-3)..... UOC:AD5,AD7	1

END OF FIGURE

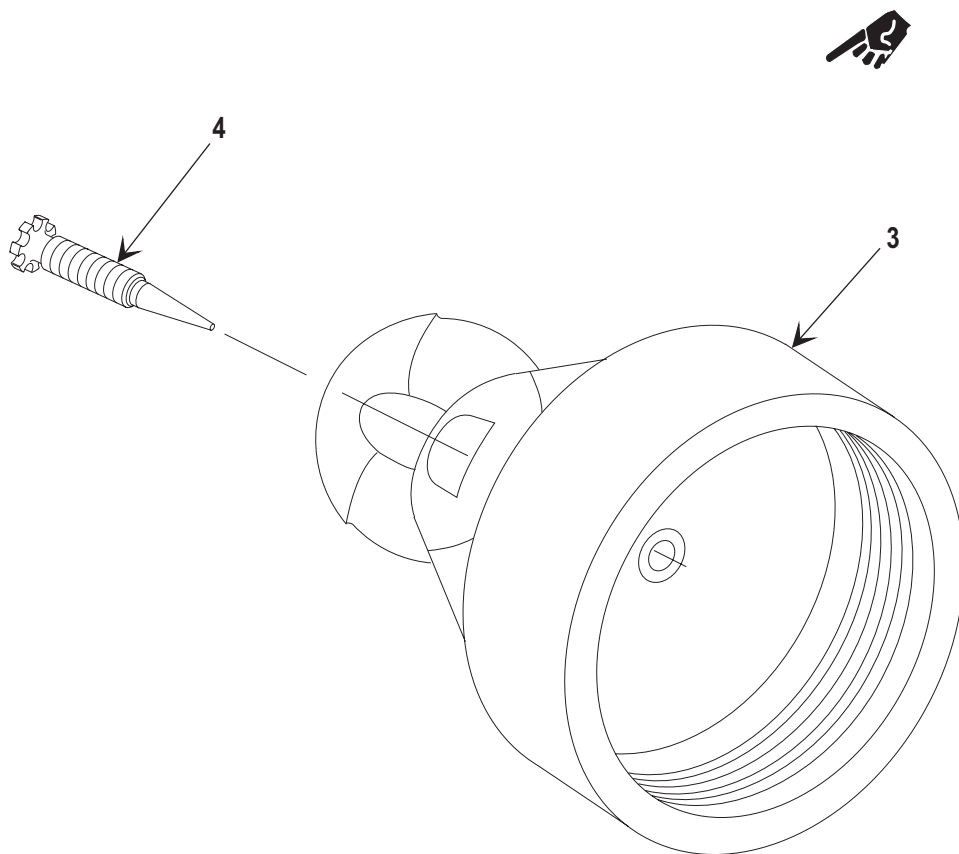


Figure C-3. Breech Assembly 12901190.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-3 GROUP 0101 BREECH ASSEMBLY 12577301	
*1					DELETED	
*2					DELETED	
*3	XACDD		19206	12901191	CAP,BREECH UOC:AD5,AD7	1
*4	PACZZ	1015-01-522-0775	1NUW7	12901192	PIN,FIRING UOC:AD5,AD7	3
*5					DELETED	

END OF FIGURE

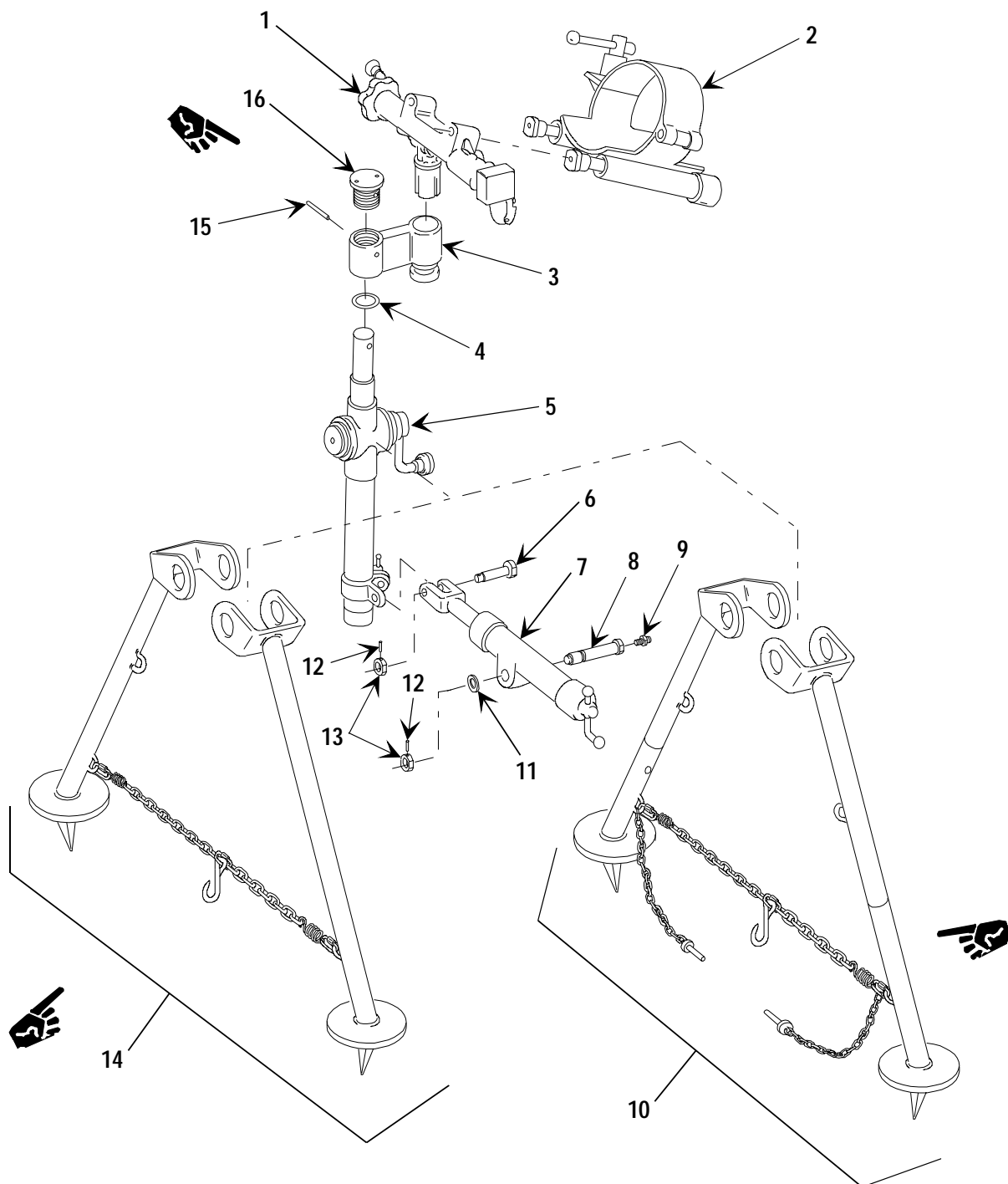


Figure C-4. Mount, Mortar: M190 12576999;
Mount, Mortar: M191 12901000.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-4 GROUP 02 MOUNT, MORTAR: M190 12576999; MOUNT, MORTAR: M191 12901000	
1	PAFFF	1015-01-292-5243	19206	12577019	TRAVERSING GEAR ASSEMBLY, MORTAR,120MM (FOR ASSEMBLY BREAKDOWN SEE FIG. C-12).....	1
					UOC:AD5,AD7	
2	PAFFF	1015-01-301-3213	19206	12577113	BUFFER MECHANISM (FOR ASSEMBLY BREAKDOWN SEE FIG. C-9).....	1
					UOC:AD5,AD7	
3	PAFFF	1015-01-387-0583	19206	12901124	TRAVERSING EXTENSION ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-14).....	1
					UOC:AD5,AD7	
4	PAFZZ	5330-01-286-0463	19206	12577319	PACKING,PREFORMED	1
					UOC:AD5,AD7	
*5	XAFFF		19206	12900901	ELEVATING MECHANISM,M121 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-7).....	1
					UOC:AD7	
*5	XAFFF		19206	12577061	ELEVATING MECHANISM,M120 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-7).....	1
					UOC:AD5	
6	PAFZZ	5306-01-299-5923	19206	12577060	BOLT,SHOULDER	1
					UOC:AD5,AD7	
7	PAFFF	1015-01-292-9239	19206	12577039	CROSS LEVELING MECHANISM (FOR ASSEMBLY BREAKDOWN SEE FIG. C-8).....	1
					UOC:AD5,AD7	
8	PAFZZ	4730-01-429-8354	19206	12577050	PIVOT SHAFT.....	1
					UOC:AD5,AD7	
9	PAFZZ	4730-00-050-4203	96906	MS15001-1	FITTING,LUBRICATION	1
					UOC:AD5,AD7	
10	XDFFF		19206	12900891	BIPOD LEG ASSEMBLY,M121 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-6).....	1
					UOC:AD7	
11	PAFZZ	5310-01-286-0475	19206	12577055	WASHER,FLAT	1
					UOC:AD5,AD7	
12	PAFZZ	5315-01-291-4573	D8286	DIN1481-3X18- B2D	PIN,SPRING.....	2
					UOC:AD5,AD7	
13	PAFZZ	5310-01-292-7757	19206	12577042	NUT,PLAIN,ROUND	2
					UOC:AD5,AD7	
14	XDFFF		19206	12577000	BIPOD LEG ASSEMBLY,M120 (FOR ASSEMBLY BREAKDOWN SEE FIG. C-5).....	1
					UOC:AD5	

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
15	PAFZZ	5315-01-388-2294	81349	D63464/ 7-06050	PIN,GROOVED,HEADLESS..... UOC:AD5,AD7	1
16	PAFZZ	5365-01-304-5517	19206	12577112	BUSHING,MACHINE THREADED UOC:AD5,AD7	1
END OF FIGURE						

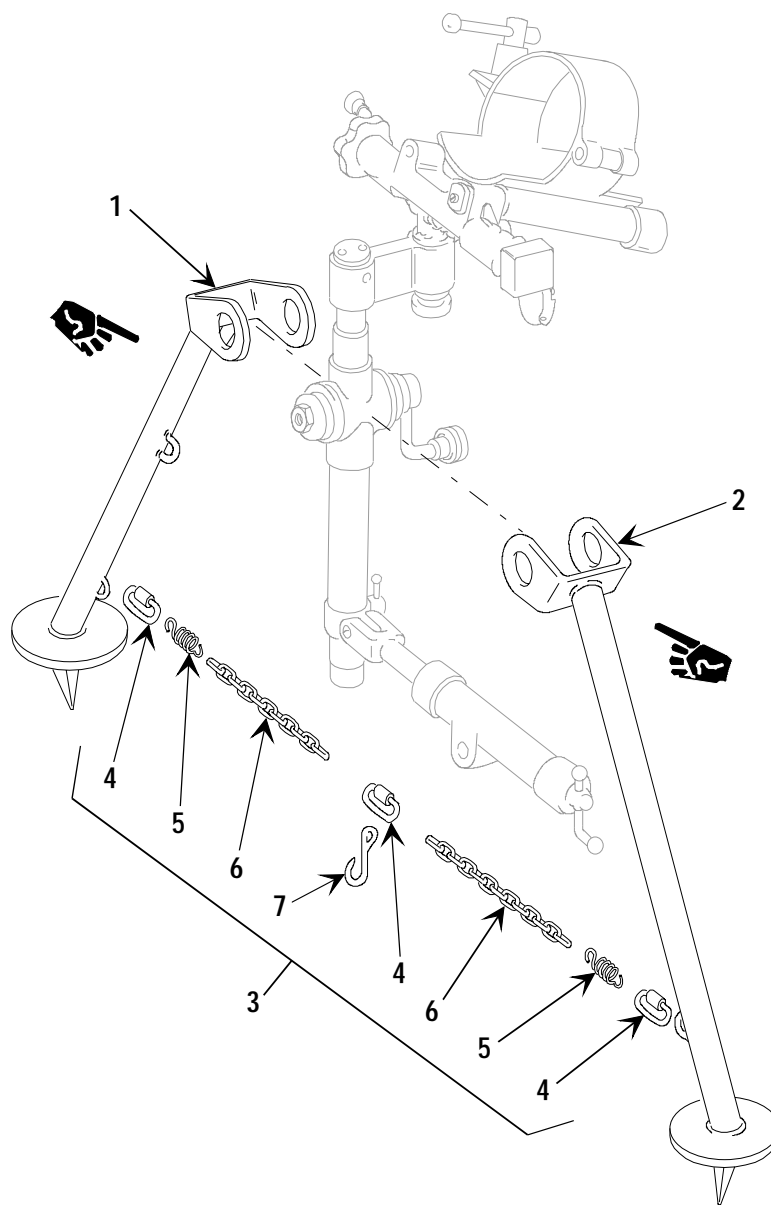


Figure C-5. M190 Bipod Leg Assembly 12577000
and Chain Assembly 12901120.

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-5 GROUP 0201 AND 020101 M190 BIPOD LEG ASSEMBLY 12577000 AND CHAIN ASSEMBLY 12901120	
1	PAFZZ	1015-01-292-7771	19206	12577012	LEG,MORTAR MOUNT,RIGHT	1
					UOC:AD5	
2	PAFZZ	1015-01-293-8859	19206	12577001	LEG,MORTAR MOUNT,LEFT.....	1
					UOC:AD5	
*3	PAOOO	4010-01-388-8355	19206	12901120	CHAIN ASSEMBLY	1
					UOC:AD5,AD7	
*4	PAOZZ	4010-01-391-3407	19206	12901116	.RING,CONNECTING,ROUND	3
					UOC:AD5,AD7	
*5	PAOZZ	5360-01-476-6489	19206	12577018	.SPRING	2
					UOC:AD5,AD7	
*6	PAOZZ	4010-01-476-6486	19206	12577015	.CHAIN	2
					UOC:AD5,AD7	
*7	PAOZZ	4030-01-332-4568	19206	12577017	.HOOK,CHAIN,S.....	1
					UOC:AD5,AD7	

END OF FIGURE

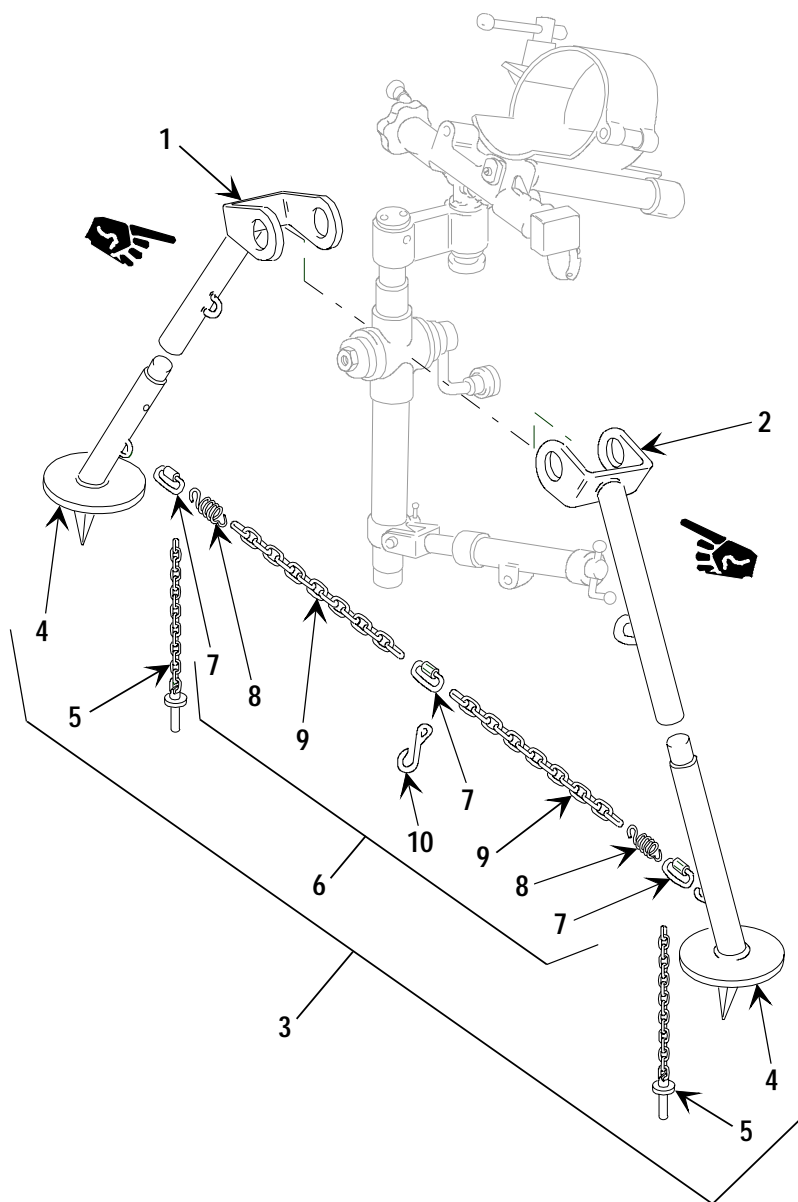


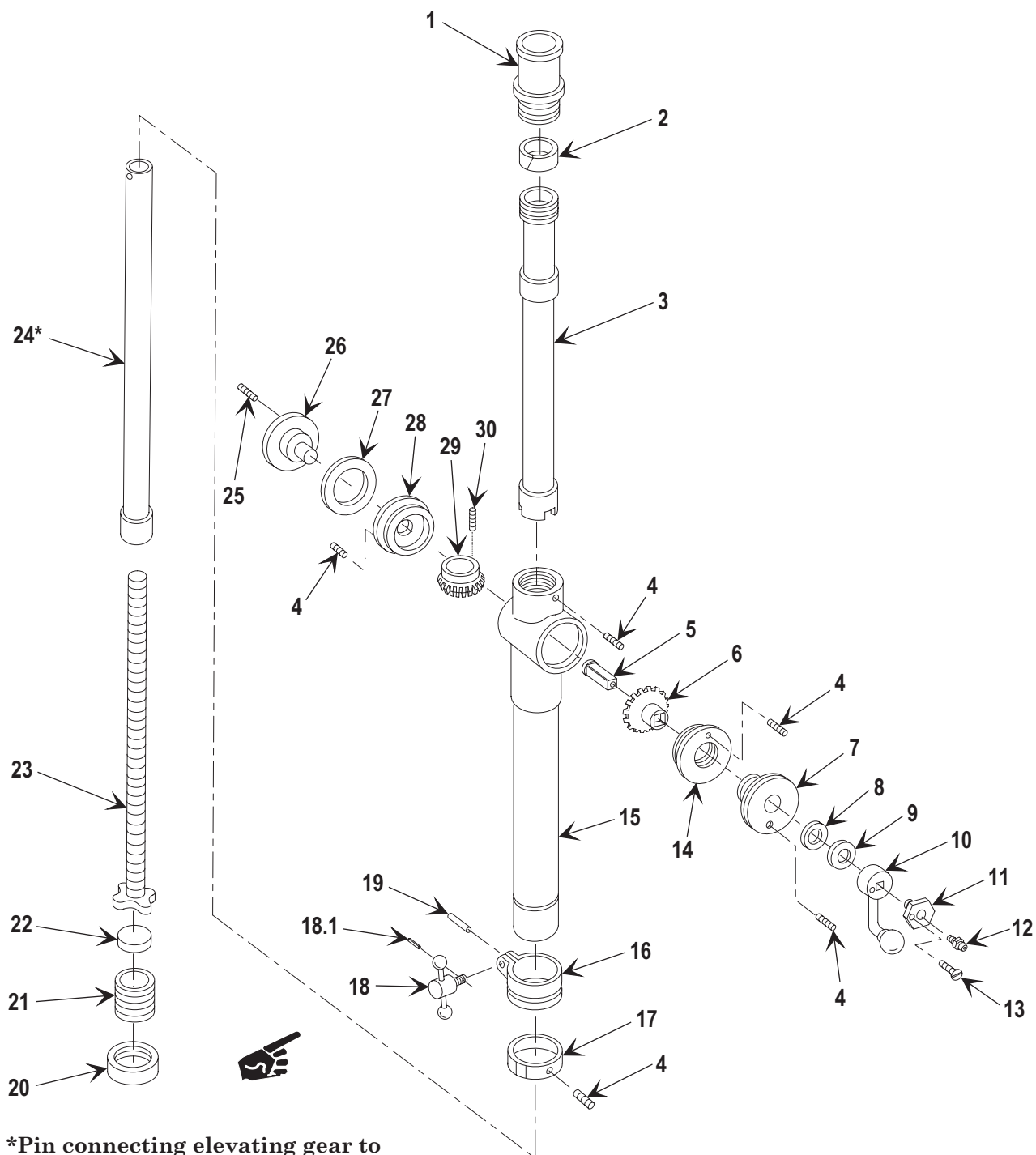
Figure C-6. M191 Bipod Leg Assembly 12900891,
Bipod Leg Extension Assembly 12900904,
and Chain Assembly 12901120.

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-6 GROUP 0201, 020102, AND 02010201 M191 BIPOD LEG ASSEMBLY 12900891, BIPOD LEG EXTENSION ASSEMBLY 12900904, AND CHAIN ASSEMBLY 12901120	
1	PAFZZ	1015-01-298-8501	19206	12900898	LEG,MORTAR MOUNT,RIGHT	1
					UOC:AD7	
2	PAFZZ	1015-01-299-8806	19206	12900893	LEG,MORTAR MOUNT,LEFT.....	1
					UOC:AD7	
3	PAOOO	1015-01-292-5242	19206	12900904	BIPOD LEG EXTENSION ASSEMBLY	1
					UOC:AD7	
4	PAOZZ	1015-01-312-6330	19206	12900905	.MORTAR MOUNT LEG SECTION	2
					UOC:AD7	
5	PAOZZ	5315-01-386-3977	19206	12901110	.PIN ASSEMBLY,LOCKING	2
					UOC:AD7	
*6	PAOOO	4010-01-388-8355	19206	12901120	.CHAIN ASSEMBLY.....	1
					UOC:AD5,AD7	
*7	PAOZZ	4010-01-391-3407	19206	12901116	..RING,CONNECTING,ROUND	3
					UOC:AD5,AD7	
*8	PAOZZ	5360-01-476-6489	19206	12577018	..SPRING	2
					UOC:AD5,AD7	
*9	PAOZZ	4010-01-476-6486	19206	12577015	..CHAIN	2
					UOC:AD5,AD7	
*10	PAOZZ	4030-01-332-4568	19206	12577017	..HOOK,CHAIN,S.....	1
					UOC:AD5,AD7	

END OF FIGURE



*Pin connecting elevating gear to
traversing extension assembly
supplied with traversing extension
(fig. C-14).

Figure C-7. Elevating Mechanism, M120/M121 12577061 and 12900901.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-7 GROUP 0202 ELEVATING MECHANISM, M120/M121 12577061 AND 12900901	
1	PAFZZ	3040-01-303-1341	19206	12577081	HOUSING,MECHANICAL DRIVE..... UOC:AD5,AD7	1
2	PAFZZ	5330-01-325-9971	19206	12577430	FELT,MECHANICAL PREFORMED UOC:AD5,AD7	1
3	PAFZZ	1015-01-304-0898	19206	12577067	SLEEVE,ELEVATING SCREW,OUTER.... UOC:AD5,AD7	1
*4	PAFZZ	5305-12-313-0952	D8286	DIN915-M5X8- 45H	SETSCREW UOC:AD5,AD7	5
5	PAFZZ	5310-01-295-2516	19206	12577100	NUT,SLEEVE..... UOC:AD5,AD7	1
6	PAFZZ	3020-01-299-8835	19206	12577099	GEAR,BEVEL UOC:AD5,AD7	1
7	PAFZZ	5365-01-304-5518	19206	12577073	BUSHING,MACHINE THREAD..... UOC:AD5,AD7	1
8	PAFZZ	5310-01-296-6071	19206	12577056	WASHER,FLAT UOC:AD5,AD7	1
*9	PAFZZ	5310-12-301-1728	D8286	DIN2093-B31, 5-A3	WASHER,SPRING TENSION..... UOC:AD5,AD7	1
10	PAFZZ	5340-01-387-8910	19206	12901118	CRANK,HAND UOC:AD5,AD7	1
11	PAFZZ	5305-01-304-6616	19206	12577087	SCREW,MACHINE THREAD UOC:AD5,AD7	1
12	PAFZZ	4730-00-050-4203	96906	MS15001-1	FITTING,LUBRICATION UOC:AD5,AD7	1
13	PAFZZ	5305-01-303-5199	19206	12577066	SCREW,EXTERNALLY RELIEVED BODY..... UOC:AD5,AD7	1
14	PAFZZ	3040-01-303-1339	19206	12577077	HOUSING,MECHANICAL DRIVE..... UOC:AD5,AD7	1
15	PAFZZ	1015-01-418-2237	19206	12577095	HOUSING,ELEVATING SCREW, MAIN UOC:AD5,AD7	1
16	PAFZZ	5340-01-295-1827	19206	12900902	CLAMP,LOOP (M121) UOC:AD7	1
16	PAFZZ	5340-01-294-7458	19206	12577088	CLAMP,LOOP (M120) UOC:AD5	1
17	PAFZZ	5310-01-295-2514	19206	12577094	NUT,PLAIN,ROUND UOC:AD5,AD7	1
18	PAFZZ	5340-01-465-4554	19206	12901169	HANDLE,MANUAL CONTROL UOC:AD5,AD7	1
*18.1	PAOZZ	5315-01-518-4181	96906	DOD-P- 63464/1A-0	PIN,GROOVED UOC:AD5,AD7	1
*19	PAFZZ	5315-01-291-4573	15526	DIN1481-3X16- B2D	PIN,SPRING..... UOC:AD5,AD7	1
20	PAFZZ	5310-01-295-2515	19206	12577079	NUT,PLAIN,ROUND UOC:AD5,AD7	1
21	PAFZZ	5365-01-302-4156	19206	12577075	PLUG,MACHINE THREAD UOC:AD5,AD7	1
22	PAFZZ	3120-01-300-9512	19206	12577080	BEARING,WASHER,THRUST UOC:AD5,AD7	1

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
23	PAFZZ	5305-01-302-0072	19206	12577076	SCREW,ELEVATING UOC:AD5,AD7	1
24	PAFZZ	1015-01-304-0899	19206	12577068	SLEEVE,ELEVATING SCREW,INNER..... UOC:AD5,AD7	1
25	PAFZZ	5305-01-286-0466	S3151	93-81	SETSCREW UOC:AD5,AD7	1
26	PAFZZ	5340-01-295-5384	19206	12577071	PLUG,PROTECTIVE,DUST AND MOISTURE SEAL..... UOC:AD5,AD7	1
27	PAFZZ	5310-01-292-7759	19206	12577083	WASHER,FLAT UOC:AD5,AD7	1
28	PAFZZ	3040-01-303-1340	19206	12577084	HOUSING,MECHANICAL DRIVE..... UOC:AD5,AD7	1
29	PAFZZ	3020-01-299-9596	19206	12577086	GEAR,BEVEL UOC:AD5,AD7	1
30	PAFZZ	5305-01-286-0467	S3151	93-742	SETSCREW UOC:AD5,AD7	1

END OF FIGURE

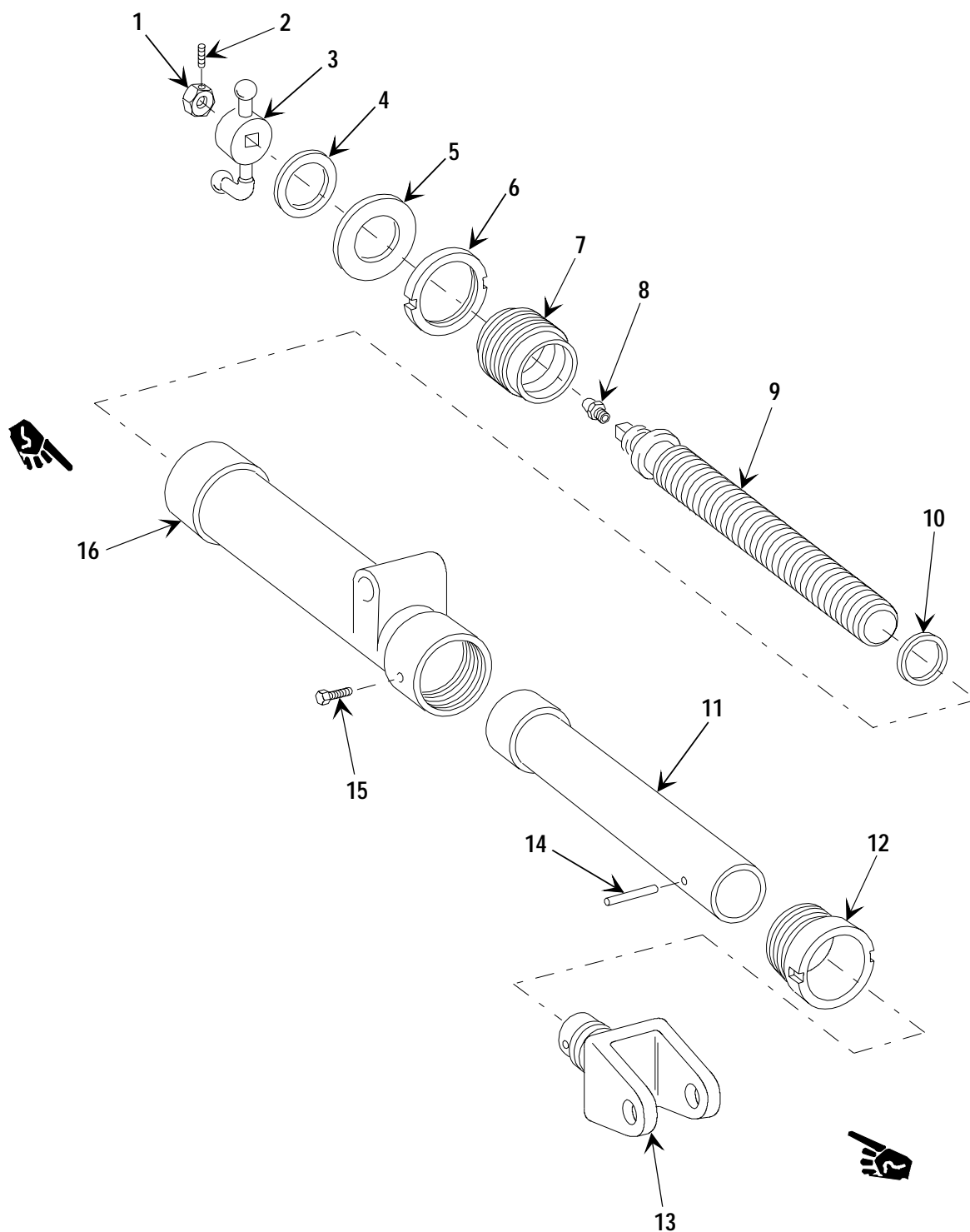


Figure C-8. Cross Leveling Mechanism 12577039.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
FIG. C-8 GROUP 0203 CROSS LEVELING MECHANISM 12577039						
1	PAFZZ	5310-01-285-7374	S3151	93-199	NUT,PLAIN,HEXAGON..... UOC:AD5,AD7	1
*2	PAFZZ	5305-01-523-3246	I9008	ISO4027-M3X4- 45H	SETSCREW UOC:AD5,AD7	1
3	PAFZZ	5340-01-388-3742	19206	12901117	CRANK,HAND UOC:AD5,AD7	1
*4	PAFZZ	5310-12-301-1728	D8286	DIN2093-B31, 5-A3	WASHER,SPRING TENSION..... UOC:AD5,AD7	1
5	PAFZZ	5310-01-296-6071	19206	12577056	WASHER,FLAT UOC:AD5,AD7	1
6	PAFZZ	5310-01-292-7758	19206	12577046	NUT,PLAIN,ROUND UOC:AD5,AD7	1
*7	PAFZZ	5365-01-305-3144	19206	12577052	BUSHING,MACHINE THREAD..... UOC:AD5,AD7	1
8	PAFZZ	4730-00-050-4203	96906	MS15001-1	FITTING,LUBRICATION UOC:AD5,AD7	1
9	PAFZZ	5305-01-301-3212	19206	12577057	SCREW,CROSS LEVELING UOC:AD5,AD7	1
10	PAFZZ	5310-01-286-0474	19206	12577051	WASHER,FLAT UOC:AD5,AD7	1
11	PAFZZ	1015-01-304-9001	19206	12577047	SLEEVE,HOUSING..... UOC:AD5,AD7	1
*12	PAFZZ	5365-01-301-8242	19206	12577048	BUSHING,MACHINE THREAD..... UOC:AD5,AD7	1
13	PAFZZ	3040-01-302-2648	19206	12577053	BRACKET,EYE,NONROTATING SHAFT UOC:AD5,AD7	1
14	PAFZZ	5315-01-388-4147	81349	D63477/8-135P	PIN,SPRING..... UOC:AD5,AD7	1
15	PAFZZ	5305-01-303-9275	19206	12577041	SCREW,EXTERNALLY RELIEVED BODY UOC:AD5,AD7	1
16	XAFZZ		19206	12577058	HOUSING,MECHANICAL DRIVE..... UOC:AD5,AD7	1

END OF FIGURE

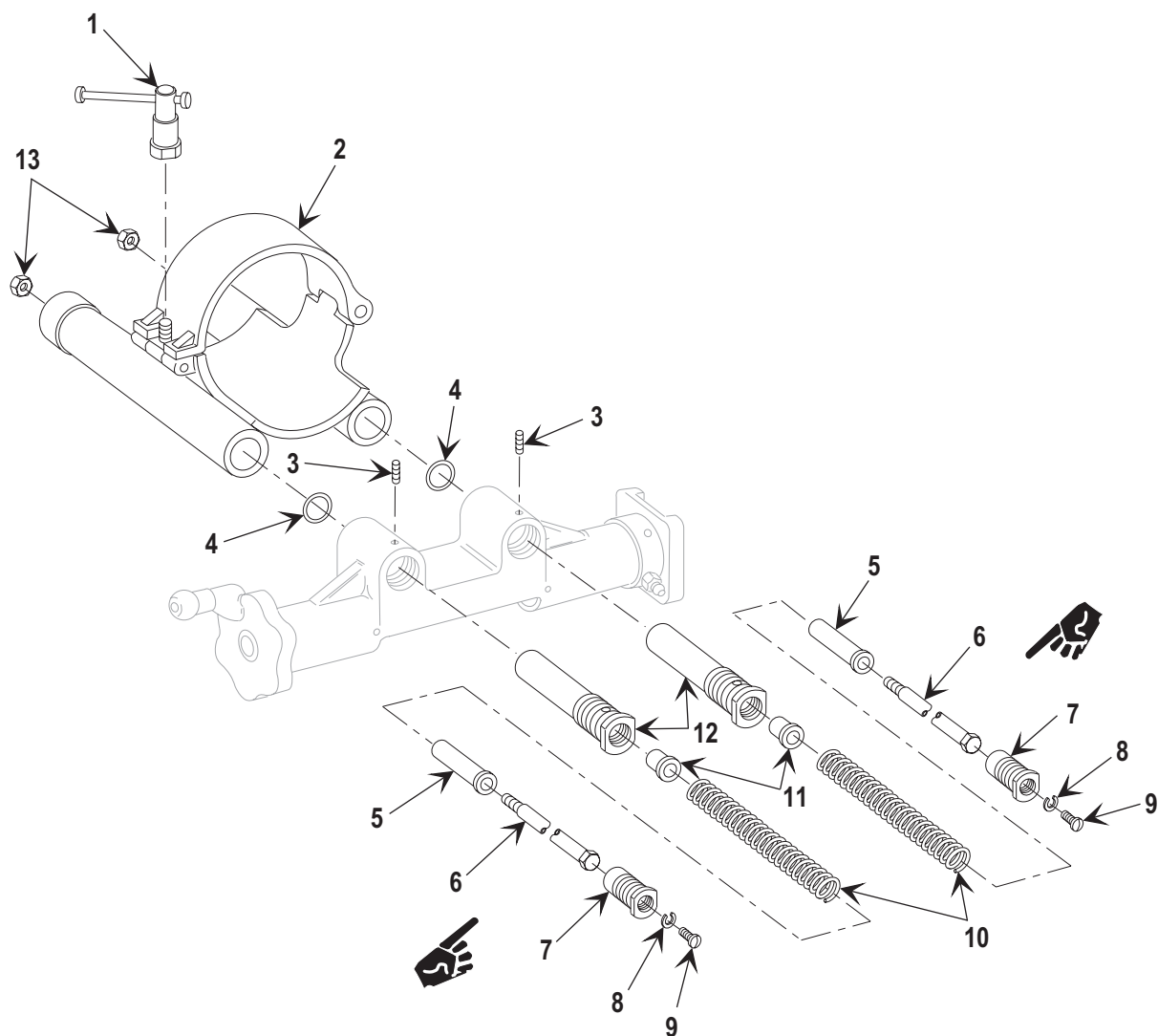


Figure C-9. Buffer Mechanism 12577113.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-9 GROUP 0204 BUFFER MECHANISM 12577113	
1	PAFFF	5340-01-304-6584	19206	12577119	HANDLE ASSEMBLY,CLAMP (FOR ASSEMBLY BREAKDOWN SEE FIG. C-11)	1
					UOC:AD5,AD7	
2	PAFFF	1015-01-304-6580	19206	12577118	BUFFER HOUSING ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-10)	1
					UOC:AD5,AD7	
*3	PAFZZ	5305-01-521-4859	I9008	ISO4028-10.9- M6X	SETSCREW	2
					UOC:AD5,AD7	
4	PAFZZ	5330-01-286-0463	19206	12577319	PACKING,PREFORMED	2
					UOC:AD5,AD7	
5	PAFZZ	3120-01-300-0897	19206	12577140	BUSHING,SLEEVE	2
					UOC:AD5,AD7	
*6	PAFZZ	5306-01-513-3322	19206	12901164	BOLT,INTERNAL WRENCHING.....	2
					UOC:AD5,AD7	
7	PAFZZ	5365-01-292-0955	19206	12577117	PLUG,MACHINE THREAD	2
					UOC:AD5,AD7	
8	PAFZZ	5310-00-582-5965	96906	MS35338-44	WASHER,LOCK.....	2
					UOC:AD5,AD7	
9	PAFZZ	5305-00-866-0444	96906	MS35266-76	SCREW,SLOTTED MACHINE	2
					UOC:AD5,AD7	
10	PAFZZ	5360-01-292-7778	19206	12577139	SPRING,HELICAL COMPRESSION.....	2
					UOC:AD5,AD7	
11	PAFZZ	5365-01-286-6308	19206	12577115	SPACER,SLEEVE.....	2
					UOC:AD5,AD7	
12	PAFZZ	3040-01-297-6580	19206	12577114	HOUSING,MECHANICAL DRIVE.....	2
					UOC:AD5,AD7	
13	PAFZZ	5310-01-286-0444	S3151	93-1386	NUT,PLAIN,HEXAGON.....	2
					UOC:AD5,AD7	

END OF FIGURE

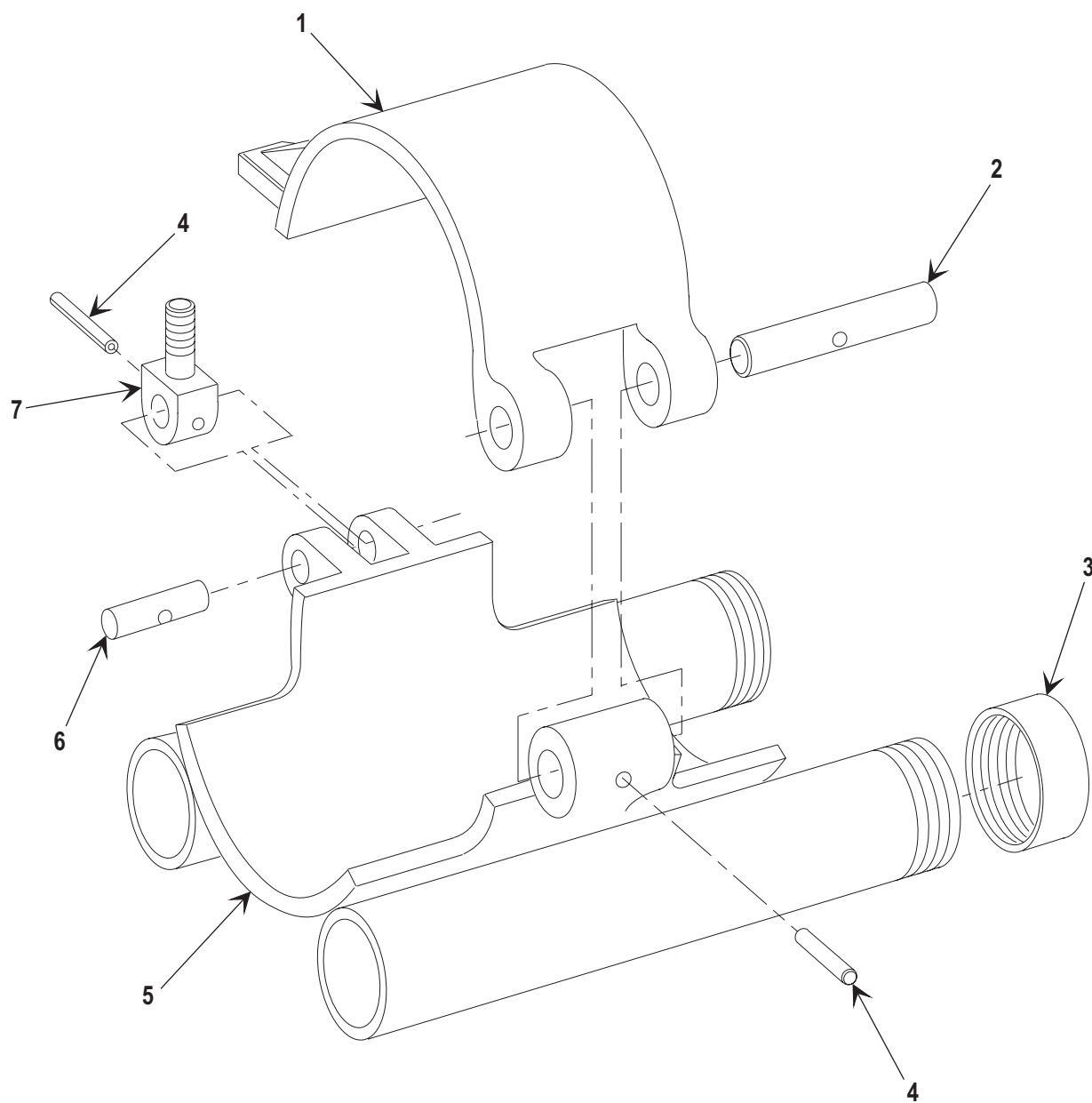


Figure C-10. Buffer Housing Assembly 12577118.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-10 GROUP 020401 BUFFER HOUSING ASSEMBLY 12577118	
1	PAFZZ	1015-01-301-3214	19206	12577134	COLLAR,SECTION,BARREL UOC:AD5,AD7	1
2	PAFZZ	5315-01-386-3481	19206	12901107	PIN,STRAIGHT,HEADLESS UOC:AD5,AD7	1
3	PAFZZ	5340-01-301-8241	19206	12577131	CAP,PROTECTIVE,DUST AND MOISTURE SEAL..... UOC:AD5,AD7	2
4	PAFZZ	5315-01-385-6101	81349	D63477/1-133C	PIN,SPRING..... UOC:AD5,AD7	2
5	XAFZZ		19206	12901132	HOUSING,BUFFER UOC:AD5,AD7	1
6	PAFZZ	5315-01-386-3492	19206	12901106	PIN,STRAIGHT,HEADLESS UOC:AD5,AD7	1
7	PAFZZ	5306-01-386-3949	19206	12901098	BOLT,EYE UOC:AD5,AD7	1

END OF FIGURE

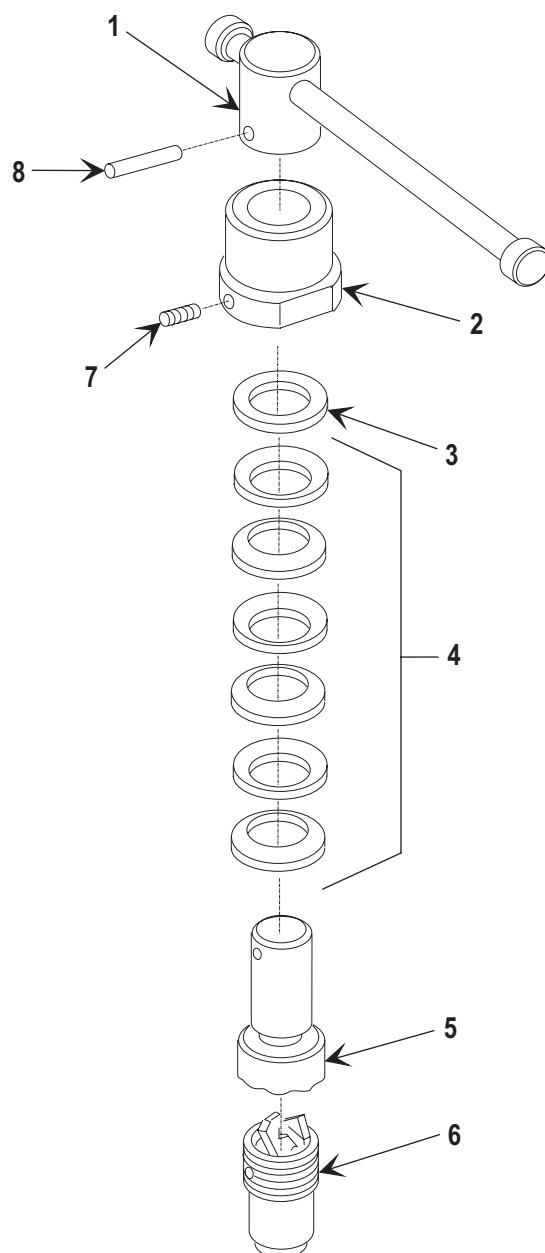


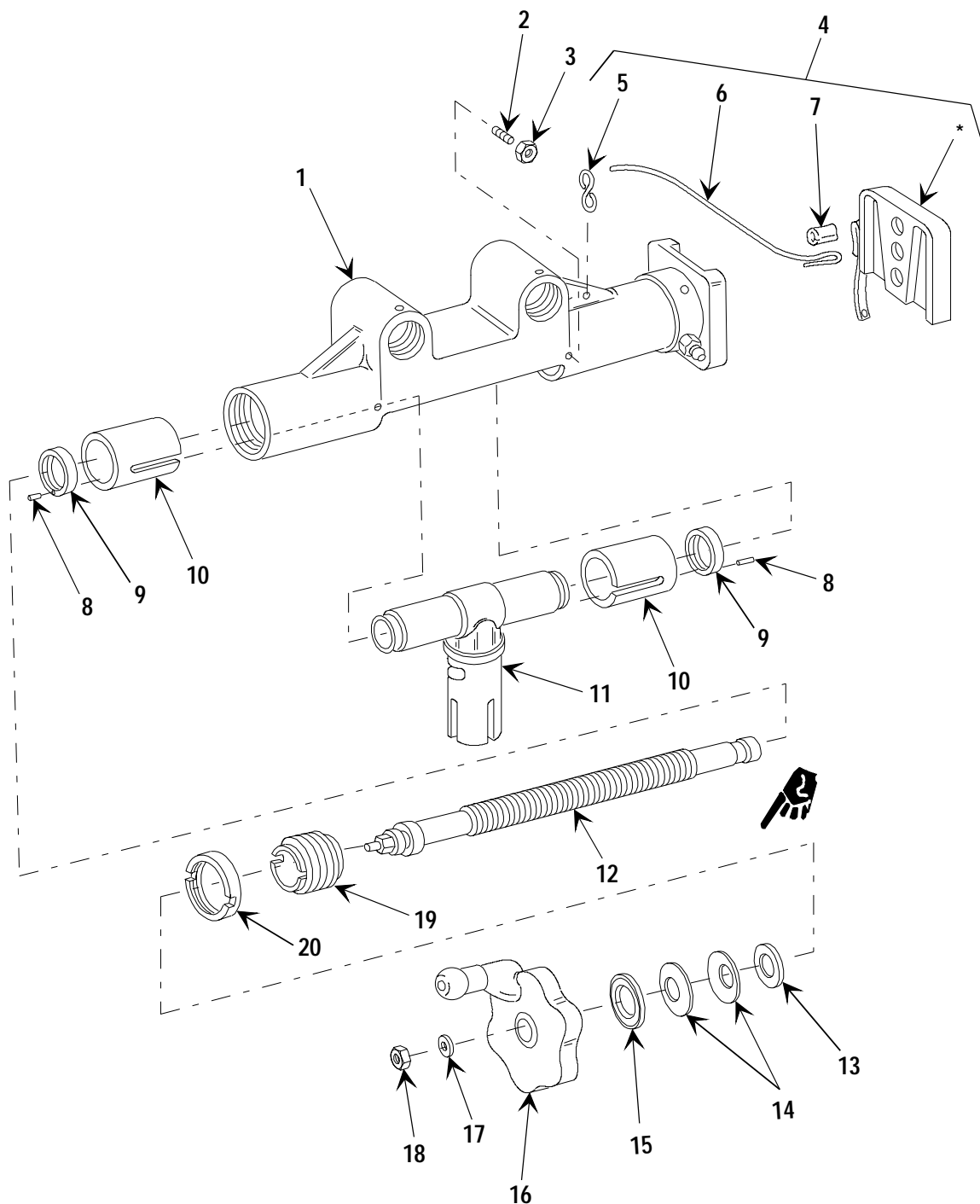
Figure C-11. Clamp Handle Assembly 12577119.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-11 GROUP 020402 CLAMP HANDLE ASSEMBLY 12577119	
1	PAFZZ	5340-01-304-6585	19206	12577126	HANDLE,MANUAL CONTROL UOC:AD5,AD7	1
2	PAFZZ	5310-01-289-5273	19206	12577122	NUT,SLEEVE..... UOC:AD5,AD7	1
3	PAFZZ	5310-01-298-8470	19206	12577125	WASHER,FLAT UOC:AD5,AD7	1
*4	PAFZZ	5310-12-156-4799	D8286	DIN2093-A28	WASHER,SPRING TENSION..... UOC:AD5,AD7	6
5	PAFZZ	3010-01-299-8855	19206	12577123	CLUTCH,HALF,POSITIVE..... UOC:AD5,AD7	1
6	PAFZZ	5310-01-306-1167	19206	12577120	NUT,SELF-LOCKING, ROUND UOC:AD5,AD7	1
*7	PAFZZ	5305-12-313-0952	D8286	DIN915-M5X8- 45H	SETSCREW UOC:AD5,AD7	1
8	PAFZZ	5315-01-385-6112	81349	D63464/ 1-06026	PIN,GROOVED,HEADLESS..... UOC:AD5,AD7	1

END OF FIGURE



***No further disassembly
authorized.**

Figure C-12. Traversing Gear Assembly 12577019
and Cover, Sightunit Adapter 12576976.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-12 GROUP 0205 AND 020501 TRAVERSING GEAR ASSEMBLY 12577019 AND COVER, SIGHTUNIT ADAPTER 12576976	
1	PAFDD	1015-01-387-0589	19206	12901123	HOUSING ASSEMBLY, TRAVERSING GEAR (FOR ASSEMBLY BREAKDOWN SEE FIG. C-13).....	1
					UOC:AD5,AD7	
2	PAFZZ	5305-01-303-1319	19206	12577038	SETSCREW	2
					UOC:AD5,AD7	
3	PAFZZ	5310-01-285-7373	S3151	93-399	NUT, PLAIN, HEXAGON.....	2
					UOC:AD5,AD7	
4	PAOOO	1015-01-285-0141	19206	12576976	COVER, SIGHTUNIT ADAPTER	1
					UOC:AD5,AD7	
5	PAOZZ	4030-00-948-7315	96906	MS87006-33	.HOOK, CHAIN, S.....	1
					UOC:AD5,AD7	
6	PAOZZ	4010-01-005-4775	81349	MIL-W-83420/ 3-001	.WIRE ROPE, JACKETED	1
					UOC:AD5,AD7	
7	PAOZZ	4030-01-114-3894	96906	MS51844-23	.SWAGING SLEEVE	2
					UOC:AD5,AD7	
*8	PAFZZ	5305-01-521-3873	I9008	ISO4026-	SETSCREW	2
				M2.5X4-1	UOC:AD5,AD7	
9	PAFZZ	5310-01-304-6532	19206	12577031	NUT, PLAIN, ROUND.....	2
					UOC:AD5,AD7	
10	PAFZZ	3120-01-300-6417	19206	12577032	BUSHING, SLEEVE	2
					UOC:AD5,AD7	
11	PAFZZ	5310-01-302-0073	19206	12577036	NUT, TRAVERSING	1
					UOC:AD5,AD7	
12	PAFZZ	5305-01-286-0479	19206	12577035	SCREW, TRAVERSING.....	1
					UOC:AD5,AD7	
13	PAFZZ	5310-01-285-7403	S3151	93-1387	WASHER, FLAT	1
					UOC:AD5,AD7	
*14	PAFZZ	5310-12-311-3530	D8286	DIN2093-B40-	WASHER, SPRING TENSION.....	2
				A3P	UOC:AD5,AD7	
15	PAFZZ	5310-01-304-9810	19206	12577020	WASHER, BEVELED	1
					UOC:AD5,AD7	
16	PAFZZ	5340-01-304-6597	19206	12577021	CRANK, HAND	1
					UOC:AD5,AD7	
17	PAFZZ	5310-01-285-7402	S3151	93-1389	WASHER, FLAT	1
					UOC:AD5,AD7	
*18	PAFZZ	5310-01-264-9404	15526	DIN985-M8-	NUT, SELF-LOCKING	1
				A4C	UOC:AD5,AD7	
19	PAFZZ	5365-01-304-5516	19206	12577033	BUSHING, MACHINE THREAD.....	1
					UOC:AD5,AD7	
20	PAFZZ	5310-01-304-6531	19206	12577034	NUT, PLAIN, ROUND.....	1
					UOC:AD5,AD7	

END OF FIGURE

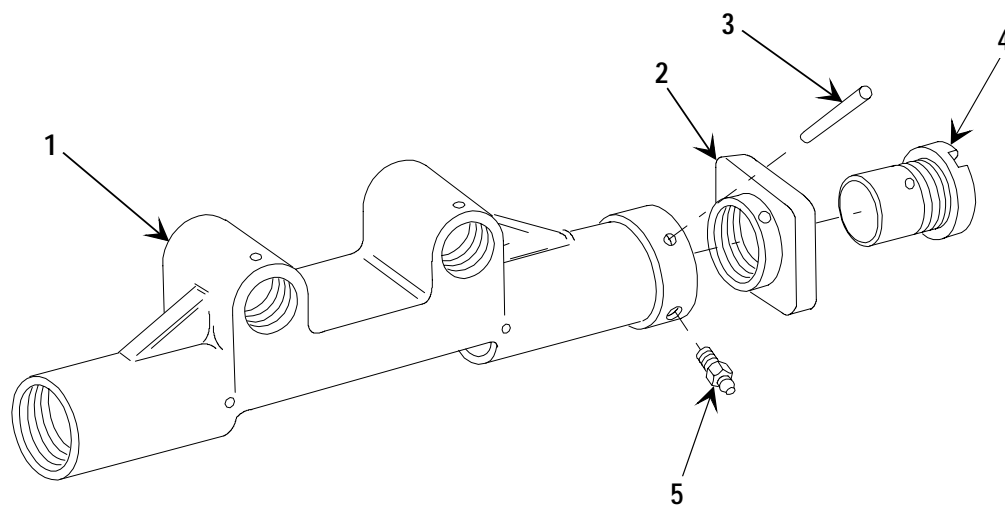


Figure C-13. Traversing Gear Housing Assembly 12901123.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-13 GROUP 020502 TRAVERSING GEAR HOUSING ASSEMBLY 12901123	
1	XADZZ		19206	12901122	HOUSING, TRAVERSING GEAR UOC:AD5,AD7	1
2	PADZZ	1015-01-285-0140	19206	12577027	ADAPTER, SIGHT UNIT UOC:AD5,AD7	1
*3	PADZZ	5315-01-482-1800	81349	D63464/2- 06070	PIN, GROOVED UOC:AD5,AD7	1
4	PADZZ	5365-01-304-5519	19206	12577030	BUSHING, MACHINE THREAD..... UOC:AD5,AD7	1
5	PAFZZ	4730-00-050-4203	96906	MS15001-1	FITTING, LUBRICATION UOC:AD5,AD7	1

END OF FIGURE

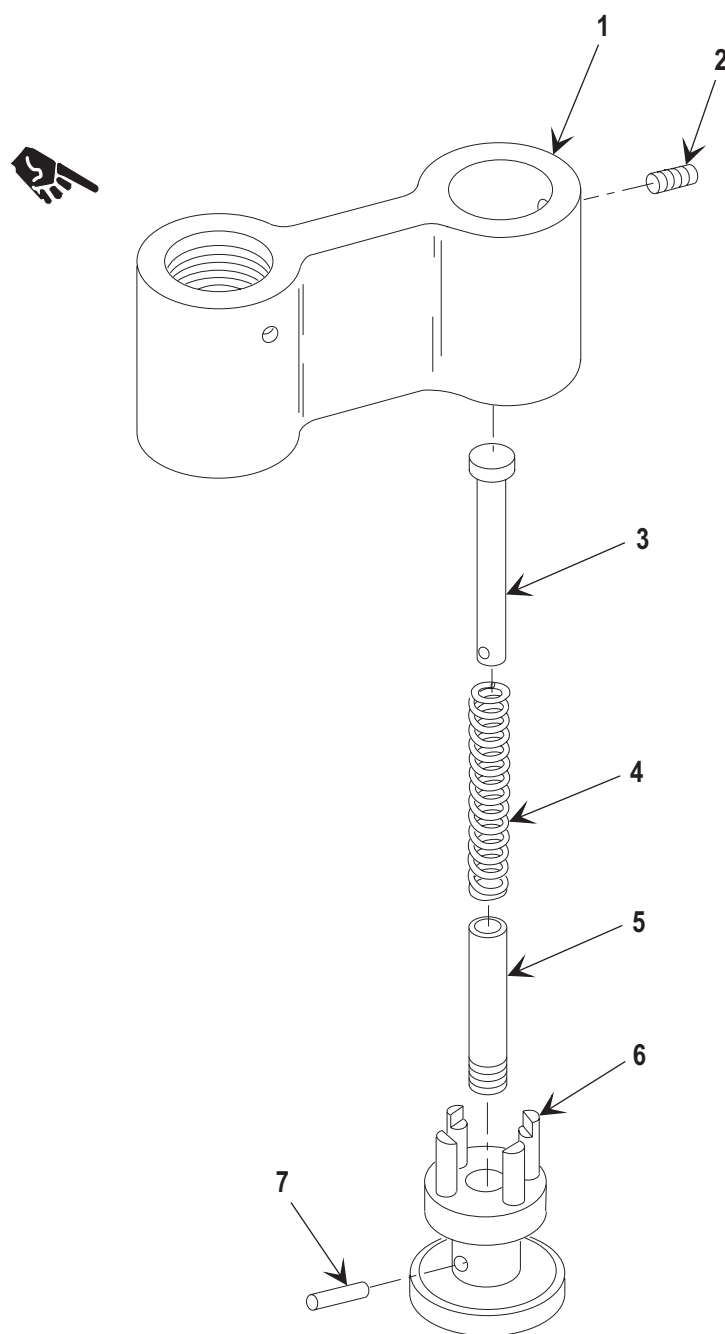


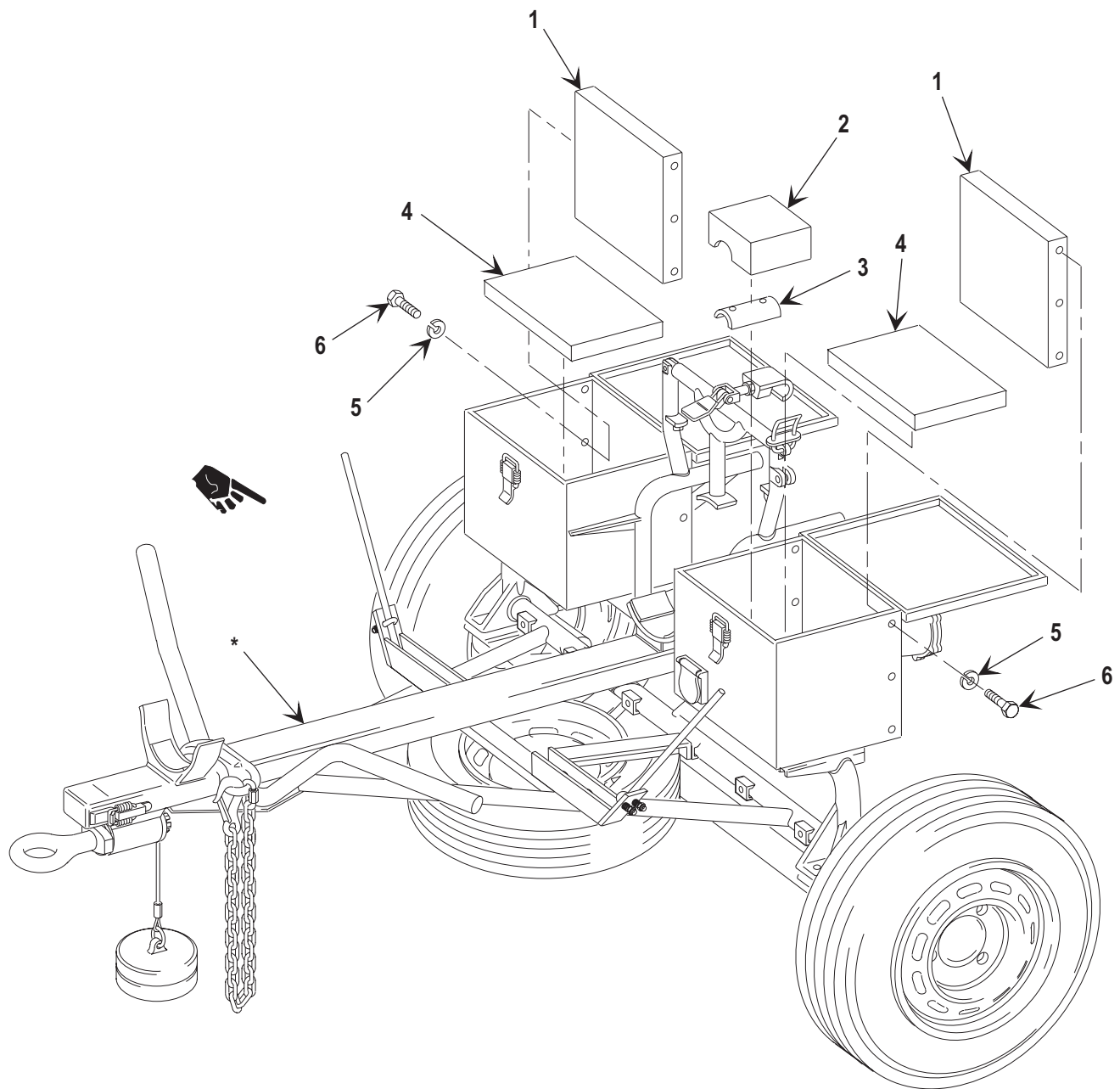
Figure C-14. Traversing Extension Assembly 12901124.

SECTION II.

TM 9-1015-250-23&P C03

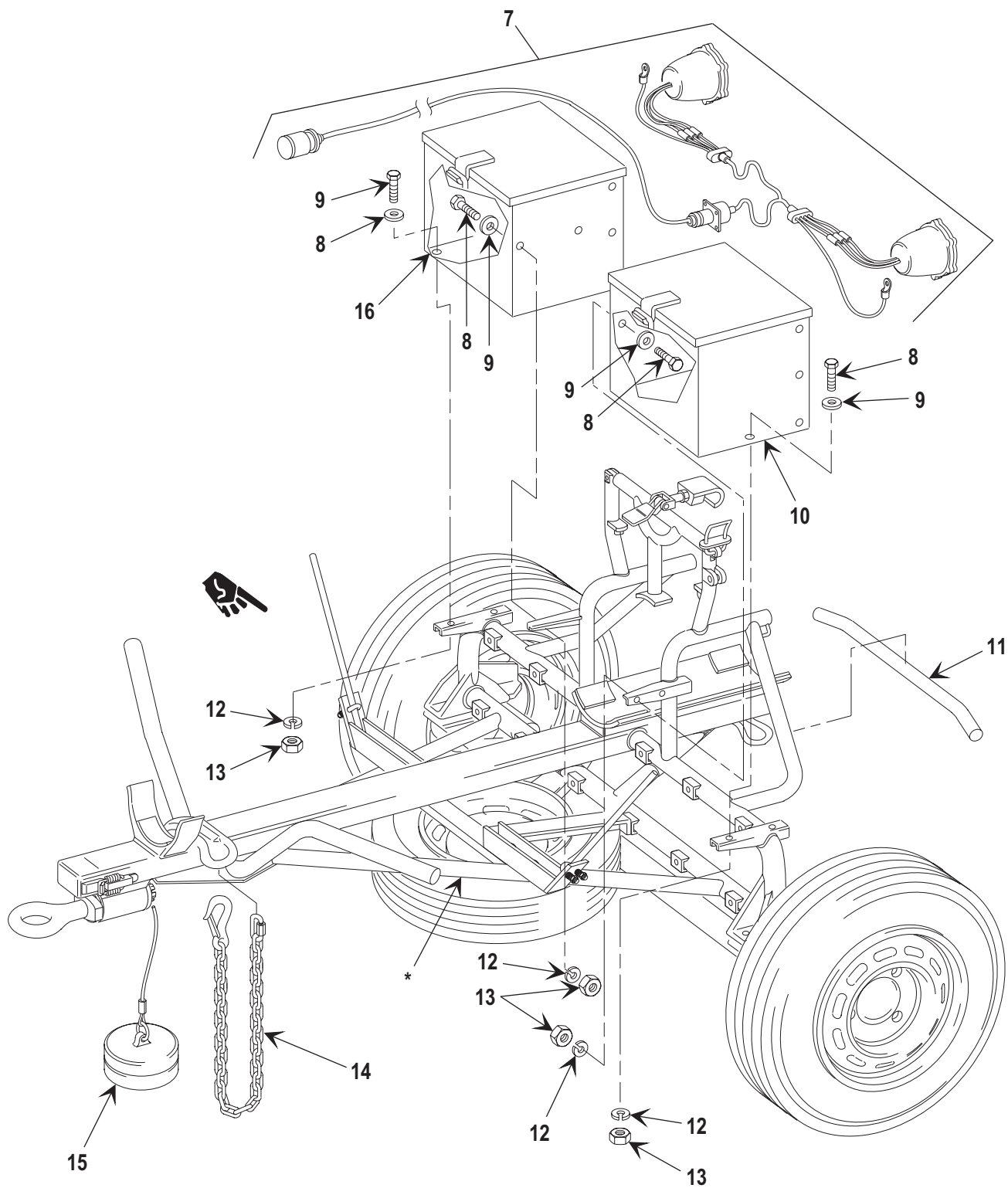
(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-14 GROUP 0206 TRAVERSING EXTENSION ASSEMBLY 12901124	
1	XAFZZ		19206	12577102	HOUSING, TRAVERSING EXTENSION.... UOC:AD5,AD7	1
2	PAFZZ	5305-01-304-6520	19206	12577110	SETSCREW UOC:AD5,AD7	1
3	PAFZZ	5315-01-299-5993	19206	12577109	PIN, STRAIGHT, HEADED UOC:AD5,AD7	1
4	PAFZZ	5360-01-300-6490	19206	12577111	SPRING, HELICAL COMPRESSION..... UOC:AD5,AD7	1
5	PAFZZ	5340-01-299-6178	19206	12577108	RETAINER, HELICAL COMPRESSION SPRING UOC:AD5,AD7	1
6	PAFZZ	5355-01-302-4082	19206	12577104	KNOB..... UOC:AD5,AD7	1
*7	PAFZZ	5315-01-291-4573	S3151	DIN1481-3X16- B2D	PIN, SPRING..... UOC:AD5,AD7	1

END OF FIGURE



***For further disassembly,
see sheet 2 of 3.**

Figure C-15. Trailer, Mortar, 120MM, M1100 12577141 (Sheet 1 of 3).



***For further disassembly,
see sheet 3 of 3.**

Figure C-15. Trailer, Mortar, 120MM, M1100 12577141 (Sheet 2 of 3).

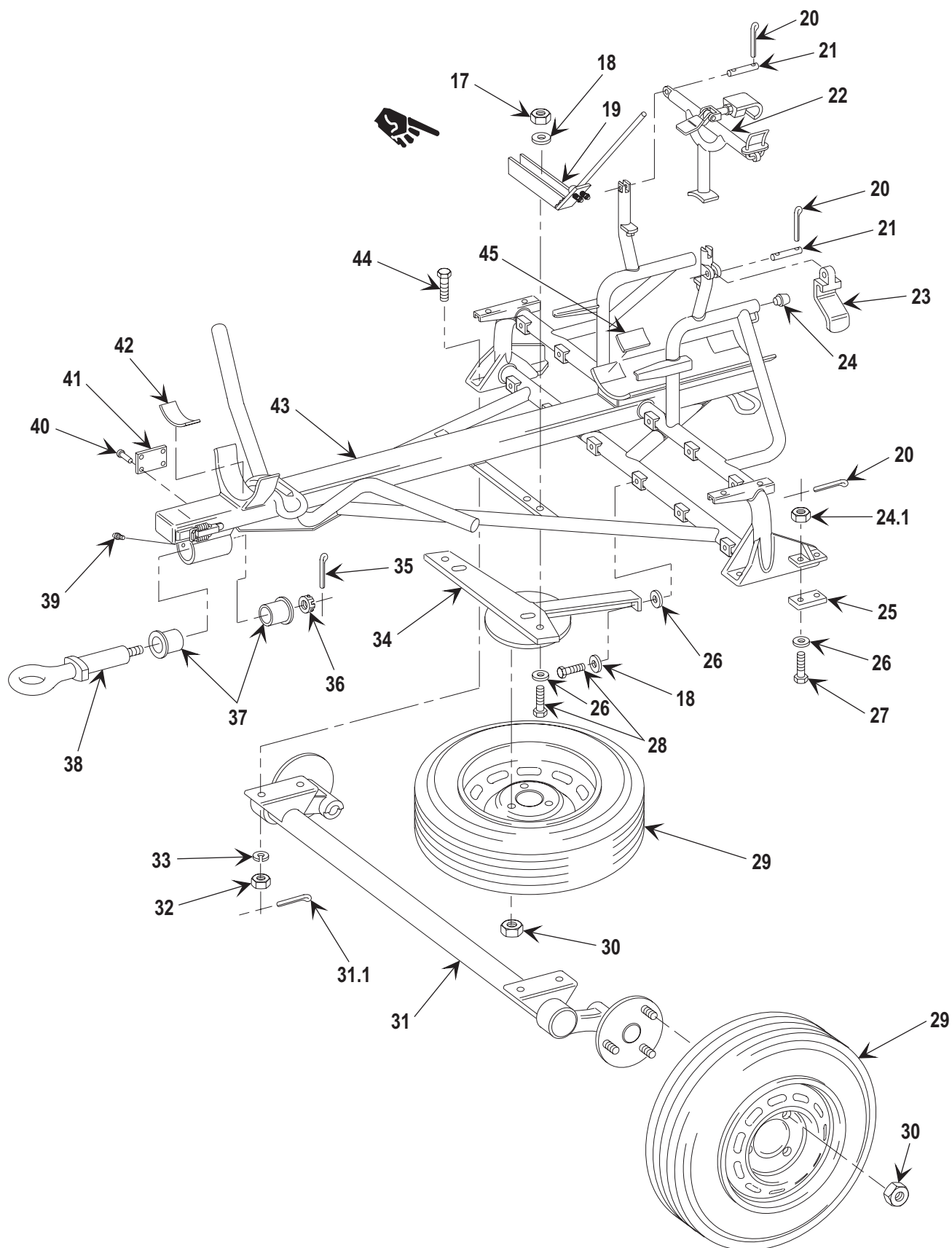


Figure C-15. Trailer, Mortar, 120MM, M1100 12577141 (Sheet 3 of 3).

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-15 GROUP 03 TRAILER, MORTAR, 120MM, M1100 12577141	
1	PAOZZ	5340-01-292-7765	19206	12577294	COVER,ACCESS..... UOC:AJ8	2
2	PAOZZ	5975-01-292-0952	19206	12577295	JUNCTION BOX..... UOC:AJ8	1
3	PAOZZ	5340-01-292-8927	19206	12577296	ACCESS COVER..... UOC:AJ8	1
4	PCOZZ	5340-01-300-8663	19206	12577284	PAD,CUSHIONING..... UOC:AJ8	2
5	PAOZZ	5310-01-285-0125	S3151	93-30	WASHER,LOCK..... UOC:AJ8	12
6	PAOZZ	5305-01-024-7309	S3151	93-102	SCREW,CAP,HEXAGON..... UOC:AJ8	12
7	AOOOO		19206	12577304	ELECTRICAL WIRING ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-21)..... UOC:AJ8	1
8	PAOZZ	5305-01-285-7415	S3151	93-367	SCREW,CAP,HEXAGON HEAD..... UOC:AJ8	8
9	PAOZZ	5310-01-285-0124	S3151	93-877	WASHER,FLAT..... UOC:AJ8	8
10	PAOOO	2540-01-333-0728	19206	12577277	BOX,ACCESSORIES,STOWAGE..... UOC:AJ8	1
11	PAOZZ	1015-01-390-6331	19206	12901129	BAR,PROTECTIVE..... UOC:AJ8	1
12	PAOZZ	5310-01-285-7409	S3151	93-1259	WASHER,LOCK..... UOC:AJ8	8
13	PAOZZ	5310-01-285-7375	S3151	93-724	NUT,PLAIN,HEXAGON..... UOC:AJ8	8
14	PAOOO	4010-01-421-4830	19200	12901163	SAFETY CHAIN ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-23)..... UOC:AJ8	2
15	PAOOO	1015-01-305-3139	19206	12577270	PLUG ASSEMBLY,MUZZLE (FOR ASSEMBLY BREAKDOWN SEE FIG. C-16)..... UOC:AJ8	1
16	PAOOO	2540-01-332-7654	19206	12577287	BOX,ACCESSORIES STOWAGE..... UOC:AJ8	1
*17	PAOZZ	5310-01-155-2503	11862	11505057	NUT,PLAIN,HEXAGON..... UOC:AJ8	4
18	PAOZZ	5310-00-209-0965	96906	MS35338-47	WASHER,LOCK..... UOC:AJ8	5
*19	PAOOO	5340-01-466-4058	19206	12901168	DRIVER'S VISION DEVICE (FOR ASSEMBLY BREAKDOWN SEE FIG. C-24)..... UOC:AJ8	2
*20	PAOZZ	5315-00-011-9120	96906	MS24665-287	PIN,COTTER..... UOC:AJ8	8
21	PAOZZ	5315-01-285-7382	S3151	93-1260	PIN,STRAIGHT,HEADLESS..... UOC:AJ8	2

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
22	PAOOO	1015-01-305-3133	19206	12577241	BRIDGE ASSEMBLY,TRAILER (FOR ASSEMBLY BREAKDOWN SEE FIG. C-18).....	1
					UOC:AJ8	
23	PAOZZ	5340-01-294-9901	19206	12577142	CATCH,CLAMPING	1
					UOC:AJ8	
24	PCOZZ	5340-01-326-5138	19206	12577179	BUMPER,NONMETALLIC	2
					UOC:AJ8	
*24.1	PAOZZ	5315-01-285-7369	S3151	DIN935- M10X1.5-B2D	NUT,PLAIN,CASTELLATED, HEXAGON.....	4
					UOC:AJ8	
25	PCOZZ	5340-01-299-6157	19206	12577293	PAD,CUSHIONING	2
					UOC:AJ8	
26	PAOZZ	5310-00-809-4061	96906	MS27183-15	WASHER,FLAT	12
					UOC:AJ8	
27	PAOZZ	5305-01-285-0132	D8286	93-112	SCREW,CAP,HEXAGON HEAD.....	4
					UOC:AJ8	
28	PAOZZ	5305-01-285-7414	56161	10503407	SCREW,CAP,HEXAGON HEAD.....	5
					UOC:AJ8	
*29	AOCOO		19206	12901154	WHEEL,PNEUMATIC TIRE (FOR ASSEMBLY BREAKDOWN SEE FIG. C-17).....	3
					UOC:AJ8	
30	PACZZ	5310-01-313-2367	19206	12577178	NUT,PLAIN HEXAGON.....	9
					UOC:AJ8	
31	PAOOO	1015-01-295-0786	19206	12577288	TORSION BAR ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-20).....	1
					UOC:AJ8	
*31.1	PAOZZ	5315-00-012-0123		MS24665-355	PIN,COTTER.....	4
					UOC:AJ8	
32	PAOZZ	5310-01-285-7371	S3151	93-1203	NUT,PLAIN,CASTELLATED, HEXAGON.....	4
					UOC:AJ8	
33	PAOZZ	5310-01-285-7407	S3151	93-137	WASHER,LOCK.....	4
					UOC:AJ8	
34	PAOZZ	1015-01-321-4235	19206	12901040	SPARE TIRE MOUNTING ASSEMBLY	1
					UOC:AJ8	
35	PAOZZ	5315-01-285-7378	S3151	93-677	PIN,COTTER.....	1
					UOC:AJ8	
36	PAOZZ	5310-01-285-7370	S3151	93-678	NUT,PLAIN,CASTELLATED, HEXAGON.....	1
					UOC:AJ8	
37	PAOZZ	3120-01-297-0612	19206	12577146	BUSHING,SLEEVE	2
					UOC:AJ8	
38	PAOZZ	5306-01-304-6579	19206	12577369	TOWING EYE,TRAILER.....	1
					UOC:AJ8	
39	PAOZZ	4730-00-050-4203	96906	MS15001-1	FITTING,LUBRICATION	1
					UOC:AJ8	
40	PAOZZ	5320-01-024-7307	D8286	DIN7337- 3.2X6B2D	RIVET,BLIND	4
					UOC:AJ8	
41	PAOZZ	9905-01-317-5795	19206	12577358	PLATE,IDENTIFICATION	1
					UOC:AJ8	
42	PAOZZ	1015-01-320-6538	19206	12577359	PAD,NEOPRENE.....	1
					UOC:AJ8	

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
*43	PBOZZ	2330-01-307-0145	19206	12577182	FRAME,TRAILER,120 MILLIMETER MORTAR	1
44	PAOZZ	5306-01-285-7392	S3151	93-1279	UOC:AJ8 BOLT,SHOULDER	4
45	PAOZZ	9320-01-412-7773	19206	12901102	UOC:AJ8 PAD,NEOPRENE.....	4
					UOC:AJ8	

END OF FIGURE

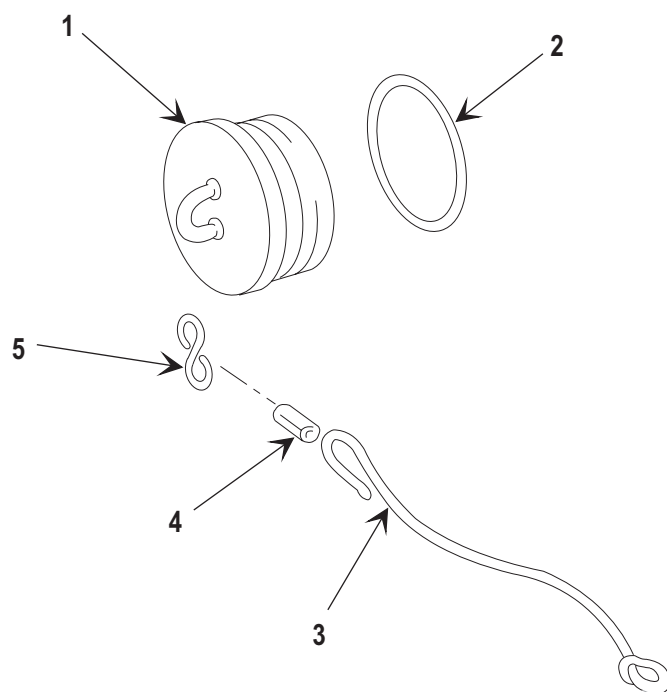


Figure C-16. Muzzle Plug Assembly 12577270.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-16 GROUP 0301 MUZZLE PLUG ASSEMBLY 12577270	
1	XAOZZ		19206	12577272	PLUG,MUZZLE..... UOC:AJ8	1
2	PCOZZ	5330-01-285-7388	19206	12577318	PACKING,PREFORMED UOC:AJ8	1
3	PAOZZ	4010-01-014-1828	81349	MIL-W-83420	WIRE ROPE,JACKETED UOC:AJ8	1
4	PAOZZ	4030-01-114-3894	96906	MS51844-23	SWAGING SLEEVE,WIRE ROPE UOC:AJ8	2
5	PAOZZ	4030-00-948-7315	96906	MS87006-33	HOOK,CHAIN..... UOC:AJ8	1

END OF FIGURE

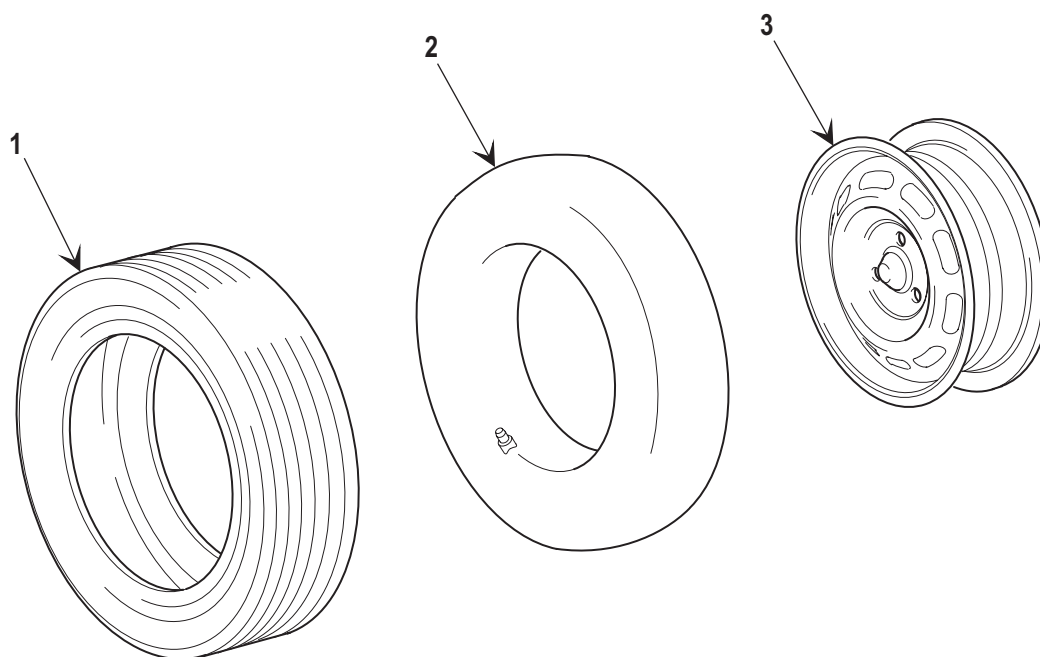


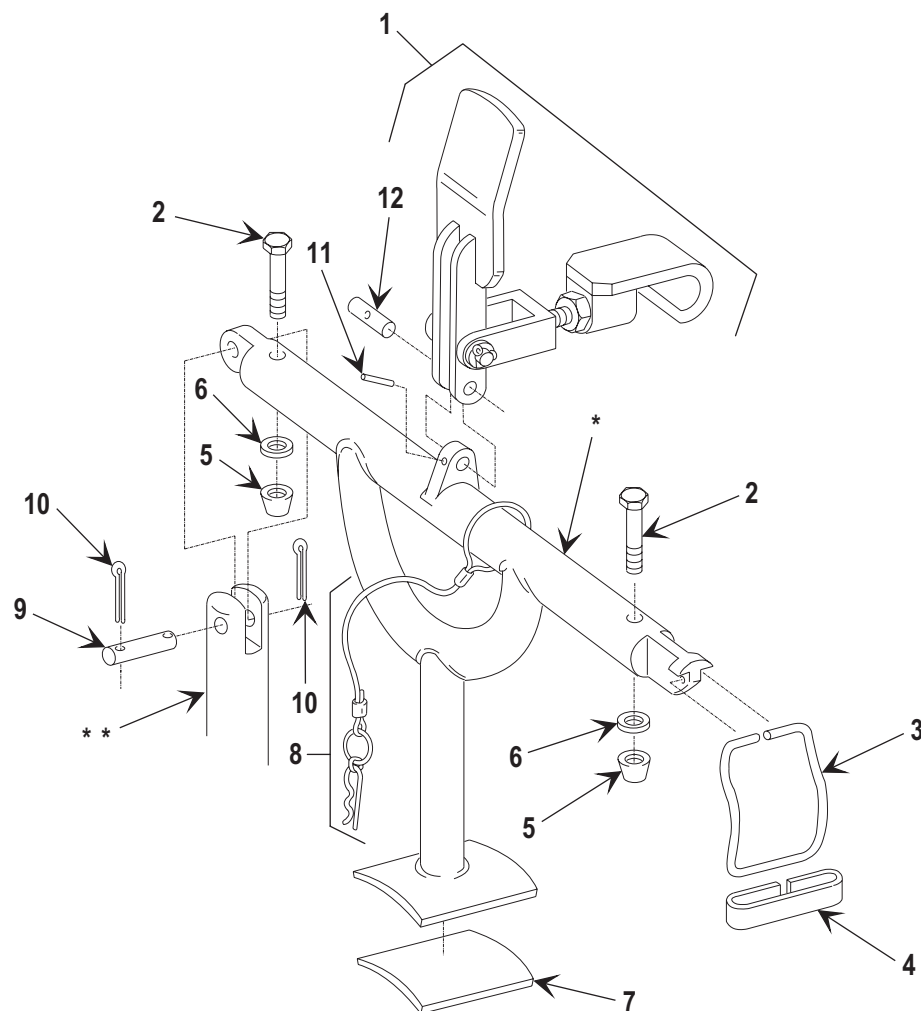
Figure C-17. Pneumatic Tire Wheel 12901154.

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-17 GROUP 0302 PNEUMATIC TIRE WHEEL 12901154	
*1	PCOOO	2610-01-203-9358	19206	12901155	TIRE,PNEUMATIC..... UOC:AJ8	1
*2	PCOOO	2610-01-333-1897	19206	12901156	INNER TUBE,PNEUMATIC..... UOC:AJ8	1
3	PAOZZ	2530-01-333-2395	19206	12577177	RIM,WHEEL,PNEUMATIC UOC:AJ8	1

END OF FIGURE



***No further disassembly
authorized.**

****Trailer frame from
fig. C-15.**

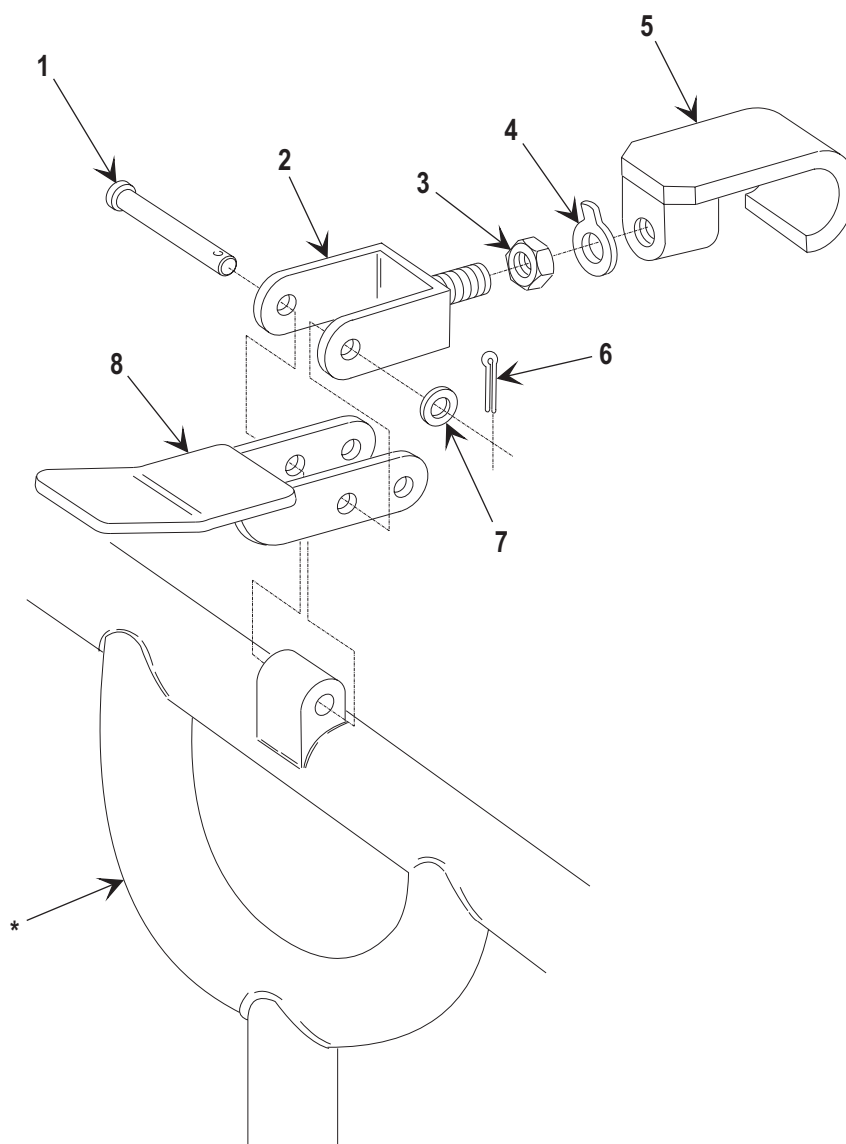
Figure C-18. Trailer Bridge Assembly 12577241.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-18 GROUP 0303 TRAILER BRIDGE ASSEMBLY 12577241	
1	PAOOO	5340-01-306-0724	19206	12577246	LEVER, LOCK RELEASE (FOR ASSEMBLY BREAKDOWN SEE FIG. C-19)	1
					UOC:AJ8	
2	PAOZZ	5305-01-285-7411	S3151	93-62	SCREW,CAP,SOCKET HEAD	2
					UOC:AJ8	
3	PAOZZ	5340-01-304-6646	19206	12577243	BUCKLE	1
					UOC:AJ8	
4	PAOZZ	5620-01-298-8485	19206	12577264	STRIP,METAL	1
					UOC:AJ8	
5	PCOZZ	5340-01-300-0914	19206	12577262	BUMPER,NONMETALLIC	2
					UOC:AJ8	
6	PAOZZ	5310-01-285-0124	S3151	93-877	WASHER,FLAT	2
					UOC:AJ8	
7	PAOZZ	9320-01-412-7773	19206	12901102	PAD,NEOPRENE.....	1
					UOC:AJ8	
8	PAOZZ	5315-01-387-8909	19206	12901109	PIN ASSEMBLY,LOCKING.....	1
					UOC:AJ8	
9	PAOZZ	5315-01-285-7382	S3151	93-1260	PIN,HEADLESS.....	1
					UOC:AJ8	
10	PAOZZ	5315-00-011-9120	96906	MS24665-287	PIN,COTTER.....	2
					UOC:AJ8	
11	PAOZZ	5315-01-294-2094	S3151	93-208	PIN,STRAIGHT,HEADLESS	1
					UOC:AJ8	
12	PAOZZ	5315-01-285-7383	S3151	93-1052	PIN,STRAIGHT,HEADLESS	1
					UOC:AJ8	

END OF FIGURE



***Trailer bridge assembly
from fig. C-18.**

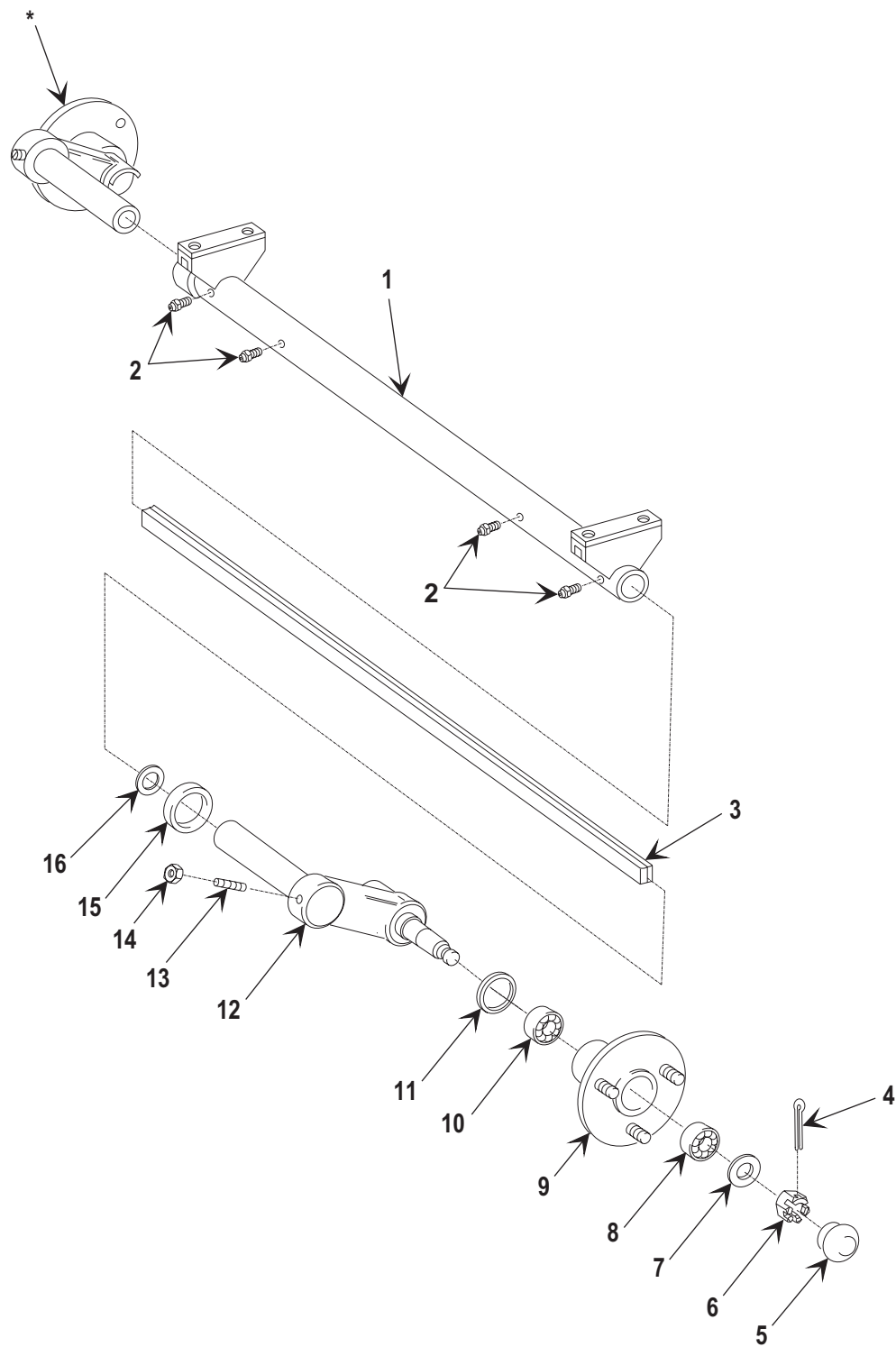
Figure C-19. Lock Release Lever 12577246.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-19 GROUP 030301 LOCK RELEASE LEVER 12577246	
1	PAOZZ	5315-01-285-7386	S3151	93-656	PIN,HEADED,PLAIN..... UOC:AJ8	1
2	PAOZZ	5314-01-330-5499	19206	12577252	CLEVIS,ROD END UOC:AJ8	1
3	PAOZZ	5310-01-286-2111	S3151	93-1518	NUT,PLAIN,HEXAGON..... UOC:AJ8	1
4	PAOZZ	5310-01-285-7377	S3151	93-47	WASHER,KEY UOC:AJ8	1
5	PAOZZ	1015-01-304-9002	19206	12577247	HOOK UOC:AJ8	1
6	PAOZZ	5315-01-285-7380	S3151	93-24	PIN,COTTER..... UOC:AJ8	1
7	PAOZZ	5310-01-285-0124	S3151	93-877	WASHER,FLAT UOC:AJ8	1
8	PAOZZ	5340-01-306-0667	19206	12577249	LEVER,MANUAL CONTROL..... UOC:AJ8	1

END OF FIGURE



***Left side of torsion bar
assembly shown assembled.**

Figure C-20. Torsion Bar Assembly 12577288.

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
FIG. C-20 GROUP 0304 TORSION BAR ASSEMBLY 12577288						
1	XAOZZ	1015-01-285-7359	19206	12577365	SHAFT,TORSION BAR ASSEMBLY..... UOC:AJ8	1
2	PAOZZ	4730-00-050-4203	96906	MS15001-1	FITTING,LUBRICATION UOC:AJ8	4
3	PAOZZ	5360-01-285-7361	19206	12577328	SPRING,FLAT..... UOC:AJ8	1
4	PAOZZ	5315-01-285-7381	S3151	93-1299	PIN,COTTER..... UOC:AJ8	2
5	PAOZZ	5340-01-285-7406	19206	12577335	CAP,PROTECTIVE,DUST AND MOISTURE SEAL..... UOC:AJ8	2
6	PAOZZ	5310-01-288-9874	S3151	93-1762	NUT,PLAIN,CASTELLATED UOC:AJ8	2
7	PAOZZ	5310-01-285-7404	S3151	93-897	WASHER,FLAT UOC:AJ8	2
8	PAOZZ	3110-01-285-7364	19206	12577490	BEARING,ROLLER,THRUST UOC:AJ8	2
9	PAOZZ	2530-01-286-2119	19206	12577360	HUB ASSEMBLY,WHEEL, VEHICULAR UOC:AJ8	2
10	PAOZZ	3110-01-285-7363	19206	12577491	BEARING,ROLLER,THRUST UOC:AJ8	2
11	PCOZZ	5330-01-285-7387	19206	12577321	SEAL,PLAIN UOC:AJ8	2
12	PAOZZ	1015-01-285-7358	19206	12577367	ARM ASSY,RIGHT UOC:AJ8	1
12	PAOZZ	2530-01-316-9247	19206	12577368	ARM ASSY, LEFT..... UOC:AJ8	1
*13	PAOZZ	5305-01-285-7399	S3151	DIN914M14X 1.5X	SETSCREW UOC:AJ8	2
14	PAOZZ	5310-01-285-7376	S3151	93-1300	NUT,PLAIN,HEXAGON..... UOC:AJ8	2
15	PCOZZ	5330-01-285-7389	19206	12577373	PACKING,PREFORMED UOC:AJ8	2
16	PCOZZ	5330-01-285-7390	19206	12577322	PACKING,PREFORMED UOC:AJ8	2

END OF FIGURE

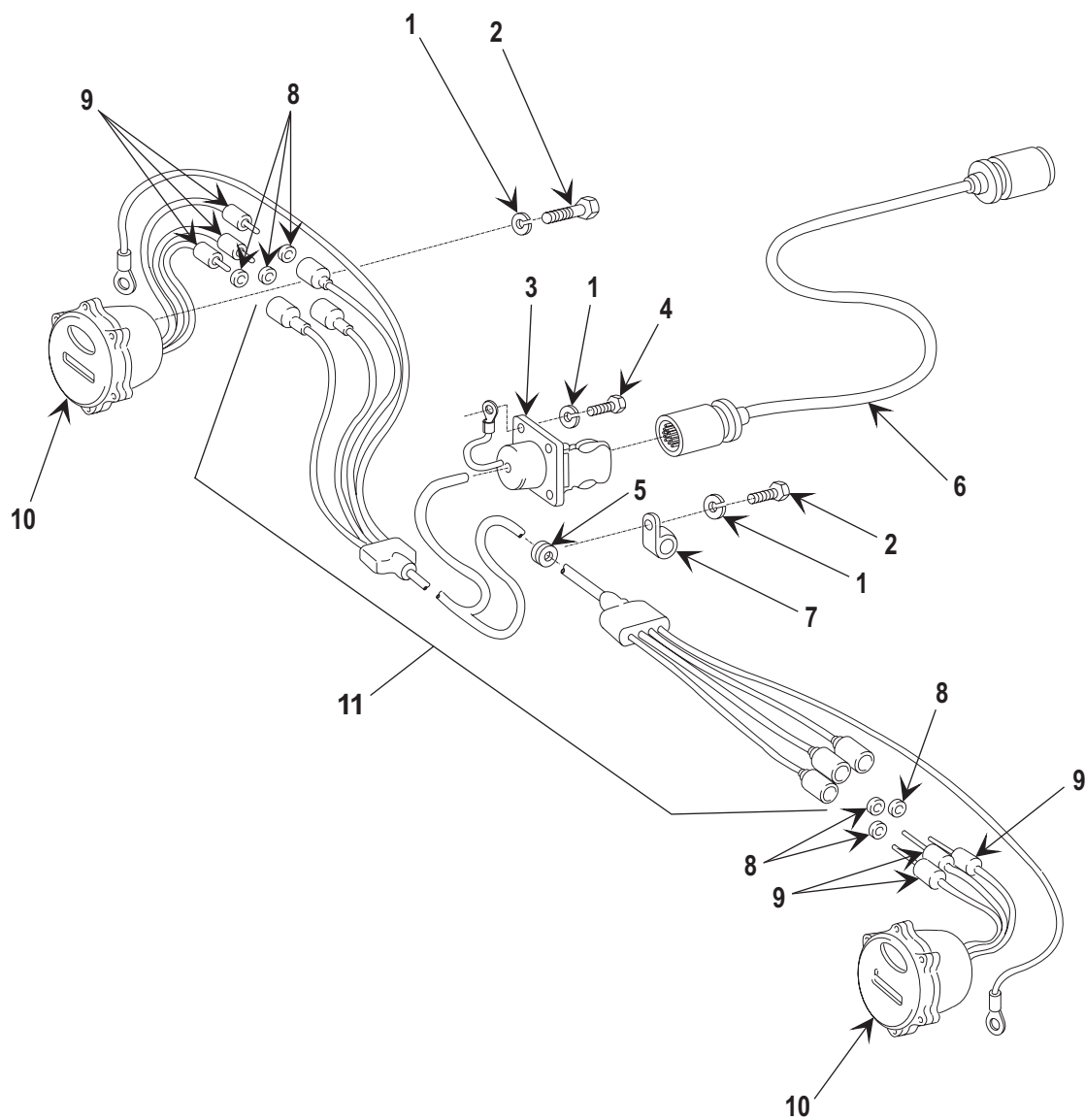


Figure C-21. Electrical Wiring Assembly 12577304.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-21 GROUP 0305 ELECTRICAL WIRING ASSEMBLY 12577304	
1	PAOZZ	5310-01-285-0125	S3151	93-30	WASHER,LOCK..... UOC:AJ8	8
2	PAOZZ	5305-01-285-7396	S3151	93-101	SCREW,MACHINE..... UOC:AJ8	4
3	PBOZZ	5935-00-773-1428	19207	7731428	COVER,ELECTRICAL..... UOC:AJ8	1
4	PAOZZ	5305-01-285-7395	S3151	93-366	SCREW,MACHINE..... UOC:AJ8	4
5	PCOZZ	5325-01-295-8129	19206	12577431	GROMMET,NONMETALLIC UOC:AJ8	2
6	PAOZZ	6150-01-310-9376	19206	12577305	CABLE ASSEMBLY,SPECIAL UOC:AJ8	1
7	PAOZZ	5340-00-705-7333	19207	7057333	CLAMP,LOOP UOC:AJ8	2
8	PAOZZ	5310-00-833-8567	19207	8338567	WASHER,SLOTTED..... UOC:AJ8	6
9	PAOZZ	5935-00-572-9180	19207	8338566	SHELL,ELEC CONNECTOR..... UOC:AJ8	6
10	PAOOO	6220-00-669-5623	96906	MS51329-1	STOPLIGHT-TAILLIGHT ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-22)..... UOC:AJ8	2
11	PAOZZ	6150-01-298-8511	19206	12577307	CABLE ASSEMBLY,SPECIAL UOC:AJ8	1

END OF FIGURE

TM 9-1015-250-23&P



Figure C-22. Stoplight-Taillight Assembly MS51329-1.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-22 GROUP 030501 STOPLIGHT-TAILLIGHT ASSEMBLY MS51329-1	
1	PAOZZ	5305-01-285-7394	96906	MS90725-58	SCREW,MACHINE..... UOC:AJ8	2
2	PAOZZ	5310-01-285-7405	96906	MS35338-42	WASHER,LOCK..... UOC:AJ8	2
3	XAOZZ		96906	MS51329-3	BODY,TAILLIGHT HOUSING UOC:AJ8	1
4	XAOZZ		96906	MS51329-5	SOCKET ASSEMBLY UOC:AJ8	1
5	PAOZZ	6240-00-044-6914	96906	MS35478-1683	LAMP,INCANDESCENT UOC:AJ8	1
6	PAOZZ	6240-00-019-0877	96906	MS15570-1251	LAMP,INCANDESCENT UOC:AJ8	2
7	PAOZZ	5330-01-252-9204	96906	MS51329-4	PREFORMED PACKING UOC:AJ8	1
8	PAOZZ	6220-01-252-9283	96906	MS51329-23	LENS ASSEMBLY,LIGHT UOC:AJ8	1
9	PCOZZ	5330-01-298-8472	19206	12577315	GASKET UOC:AJ8	1

END OF FIGURE

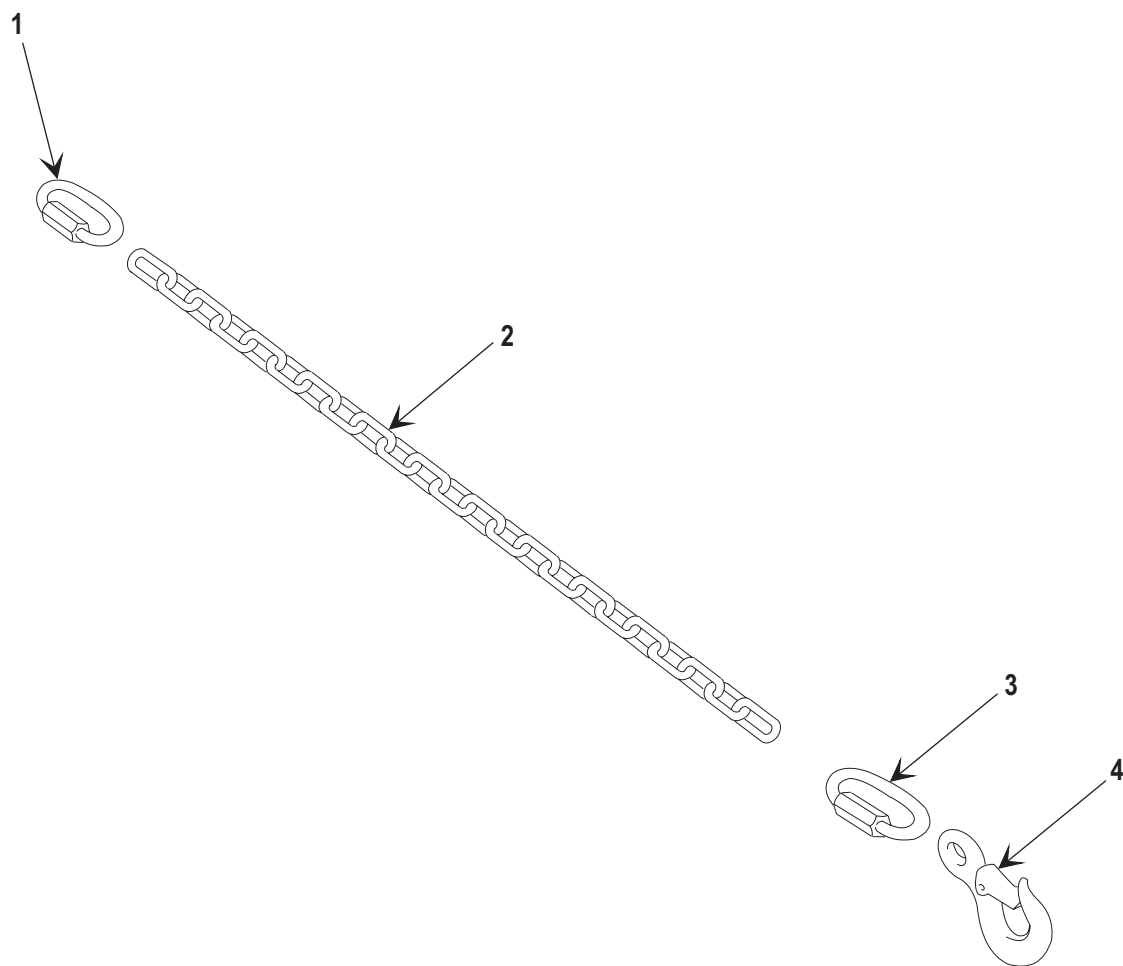


Figure C-23. Safety Chain Assembly 12901163.

SECTION II.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-23 GROUP 0306 SAFETY CHAIN ASSEMBLY 12901163	
1	PAOZZ	4010-01-241-0967	39428	8947T17	LINK,CHAIN DETACHABLE..... UOC:AJ8	1
2	PAOZZ	4010-00-988-3181	81348	RR-C-271	CHAIN ORDER IN 3FT LENGTHS ONLY (SAFETY TOW CHAIN) UOC:AJ8	1
3	PAOZZ	4010-01-209-4741	39428	8947T16	LINK,CHAIN,DETACHABLE..... UOC:AJ8	1
4	PAOZZ	4030-01-242-1985	39428	8934T14	HOOK,HOIST UOC:AJ8	1

END OF FIGURE

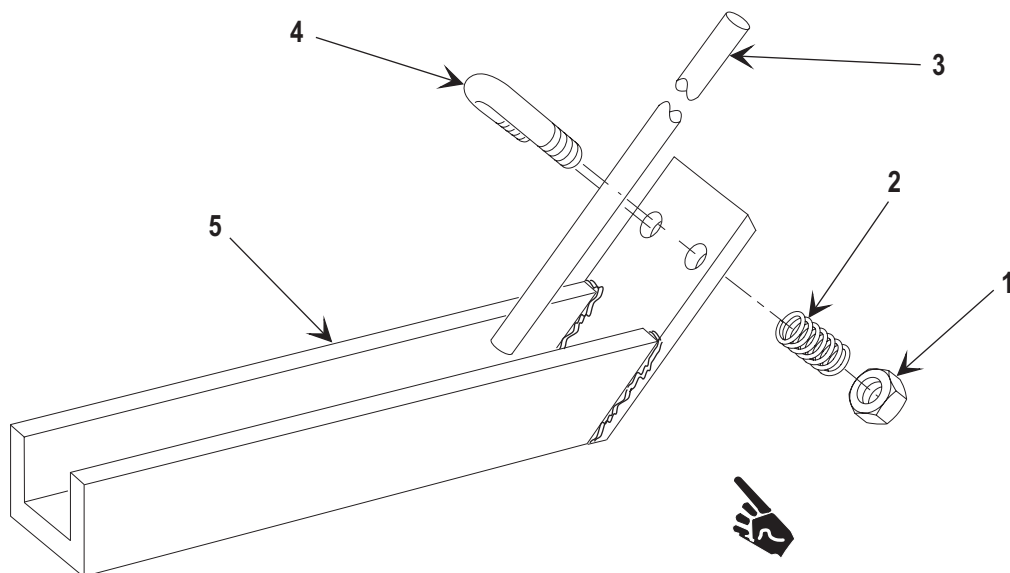


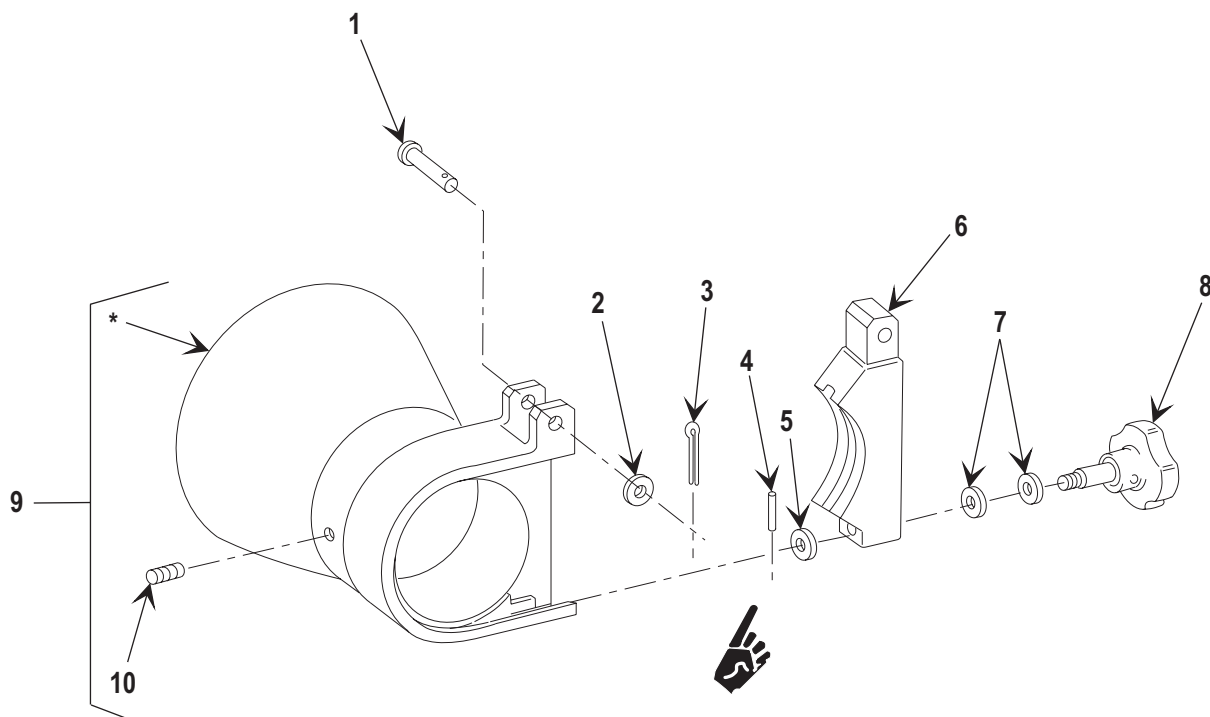
Figure C-24. Driver's Vision Device 12901168.

SECTION II.

TM 9-1015-250-23&P C01

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-24 GROUP 0307 DRIVER'S VISION DEVICE 12901168	
1	PAOZZ	5310-00-897-6145	96906	MS21083-C4	HEX NUT,SELF-LOCKING UOC:AJ8	2
2	PAOZZ	5360-01-288-1735	96906	MS24585-C227	SPRING,COMPRESSION UOC:AJ8	2
3	PAOZZ	9390-01-366-6127	19206	12901071	SHAFT,FLAG UOC:AJ8	1
4	PAOZZ	5306-01-303-9811	80205	NAS-3104- C4-12	U-BOLT UOC:AJ8	1
5	XAOZZ		19206	12901075	WELDMENT UOC:AJ8	1

END OF FIGURE



***No further disassembly
authorized.**

Figure C-25. Blast Attenuator Assembly 12901012
and Cone Assembly 12901101.

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-25 GROUP 04 AND 0401 BLAST ATTENUATOR ASSEMBLY 12901012 AND CONE ASSEMBLY 12901101	
1	PAOZZ	5315-01-354-3825	19206	12901019	PIN,STRAIGHT,HEADED	1
					UOC:AD7	
*2	PAOZZ	5310-12-131-5642	D8286	DIN1440-10- ST-A2A	WASHER,FLAT	1
					UOC:AD7	
3	PAOZZ	5315-01-386-3550	D8286	DIN94-3.2X18- ST-B5A	PIN,COTTER.....	1
					UOC:AD7	
4	PAOZZ	5315-01-294-2094	S3151	DIN148102X18	PIN, STRAIGHT, HEADLESS	1
					UOC:AD7	
5	PAOZZ	5310-01-386-6034	19206	12901119	WASHER,FLAT	1
					UOC:AD7	
6	PAOZZ	5340-01-354-4633	19206	12901014	LOCKING	1
					UOC:AD7	
7	PAOZZ	5310-12-159-0167	D8286	DIN2093-B25- B3D	WASHER,SPRING TENSION.....	2
					UOC:AD7	
8	PAOZZ	1015-01-448-1841	19206	12901162	HANDLE ASSEMBLY	1
					UOC:AD7	
9	PAOOO	1015-01-388-5570	19206	12901101	CONE ASSEMBLY	1
					UOC:AD7	
*10	PAOZZ	5305-01-286-0465	D8286	DIN915-AM- 5X8-B2D	.SETSCREW	1
					UOC:AD7	

END OF FIGURE

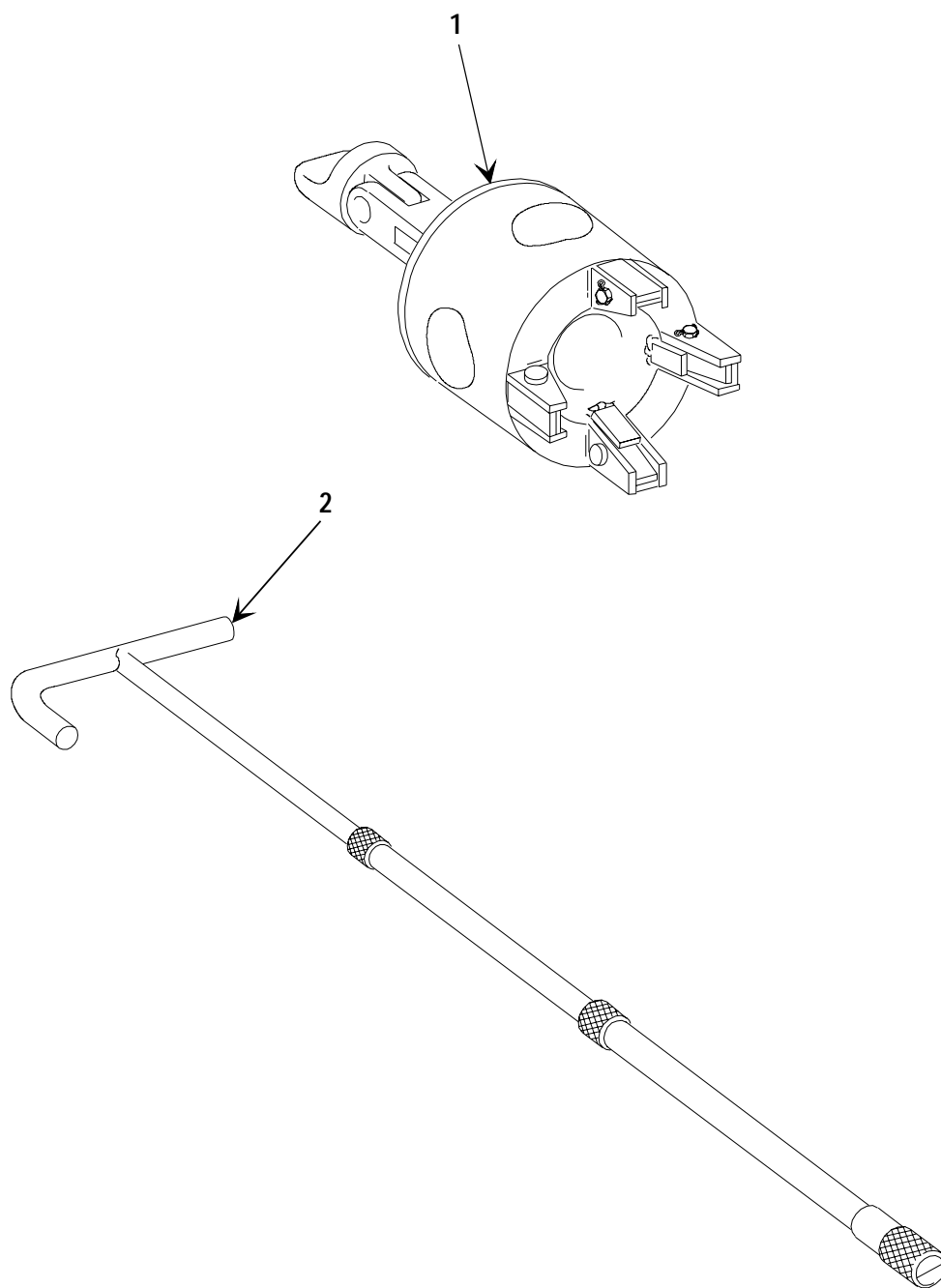


Figure C-26. Basic Issue Items (Repair Parts).

SECTION II.

TM 9-1015-250-23&P C01

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-26 GROUP 05 BASIC ISSUE ITEMS (REPAIR PARTS)	
*1	PACOO	1015-01-433-4471	19206	12901167	EXTRACTOR,CARTRIDGE (FOR ASSEMBLY BREAKDOWN SEE FIG. C-28).....	1
					UOC:AD5,AD7	
2	PACOO	1015-01-292-0966	19206	12576922	STAFF,CLEANING,ARTILLERY ASSEMBLY (FOR ASSEMBLY BREAKDOWN SEE FIG. C-27).....	1
					UOC:AD5,AD7	

END OF FIGURE

SECTION II.

TM 9-1015-250-23&P

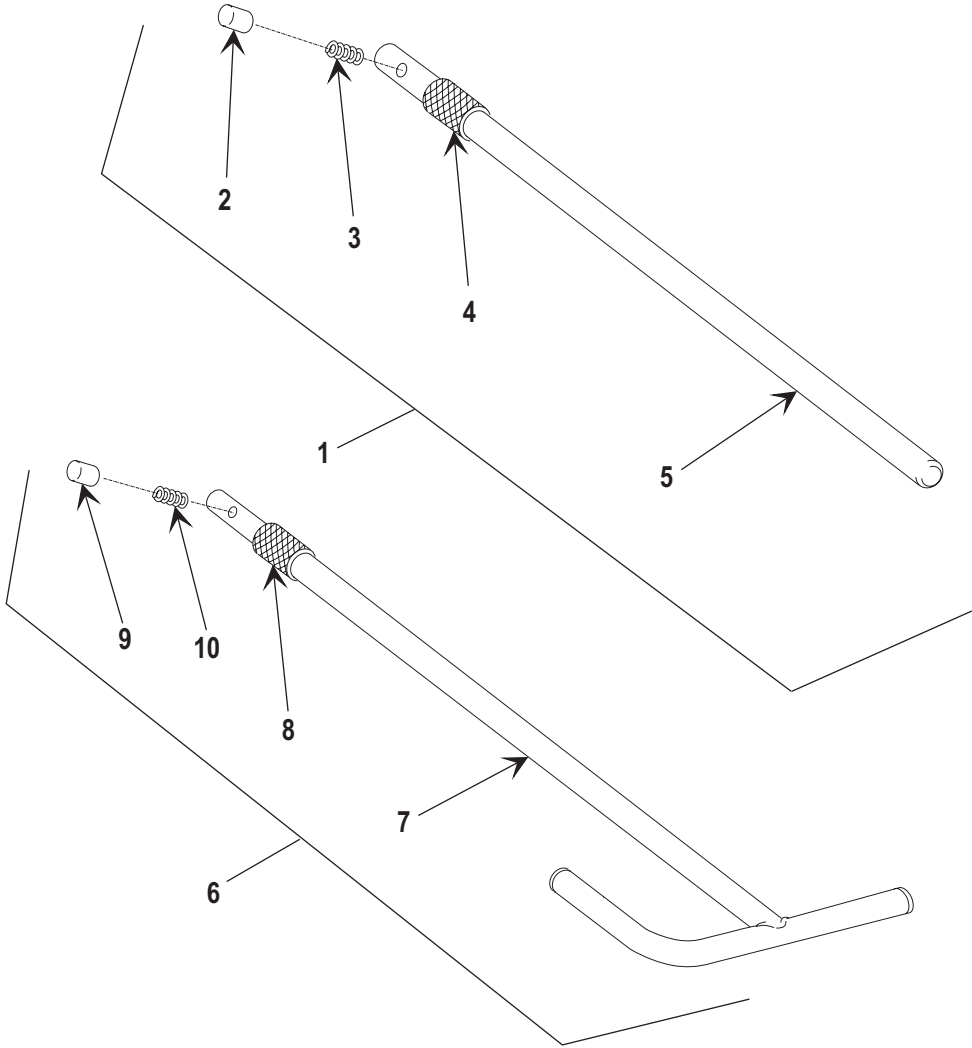


Figure C-27. Artillery Cleaning Staff Assembly 12576922,
Staff Section, Cleaning 12577325,
Handle, Manual Control 12577326,
and Staff Section, Cleaning 12577324 (Sheet 1 of 2).

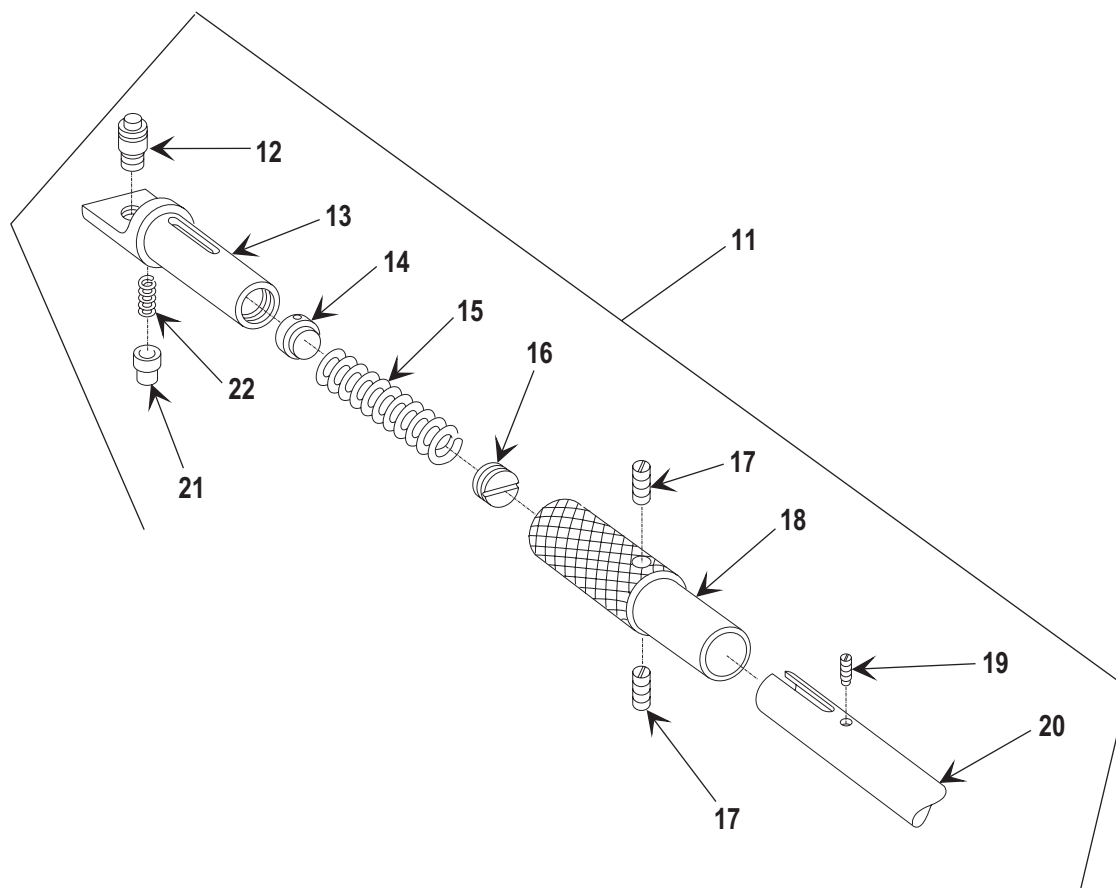


Figure C-27. Artillery Cleaning Staff Assembly 12576922,
Staff Section, Cleaning 12577325,
Handle, Manual Control 12577326,
and Staff Section, Cleaning 12577324 (Sheet 2 of 2).

SECTION II.

TM 9-1015-250-23&P C03

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-27 GROUP 0501, 050101, 050102, AND 050103 ARTILLERY CLEANING STAFF ASSEMBLY 12576922; STAFF SECTION, CLEANING 12577325; HANDLE, MANUAL CONTROL 12577326; AND STAFF SECTION, CLEANING 12577324	
1	PAOOO	1015-01-286-0440	19206	12577325	STAFF SECTION,CLEANING..... UOC:AD5,AD7	1
2	PAOZZ	1015-01-285-0142	19206	12576937	.CAP,SPRING..... UOC:AD5,AD7	1
3	PAOZZ	5360-01-300-9527	19206	12576938	.SPRING,HELICAL,COMPRESSION..... UOC:AD5,AD7	1
4	PAOZZ	4710-01-298-8540	19206	12576939	.SLEEVE..... UOC:AD5,AD7	1
5	XAOZZ		19206	12576924	.TUBE UOC:AD5,AD7	1
6	PAOOO	5340-01-286-0441	19206	12577326	HANDLE,MANUAL CONTROL UOC:AD5,AD7	1
7	XAOZZ		19206	12576925	.HANDLE UOC:AD5,AD7	1
8	XAOZZ		19206	12576941	.SLEEVE..... UOC:AD5,AD7	1
9	PAOZZ	1015-01-285-0142	19206	12576937	.CAP,SPRING..... UOC:AD5,AD7	1
10	PAOZZ	5360-01-300-9527	19206	12576938	.SPRING,HELICAL,COMPRESSION..... UOC:AD5,AD7	1
11	PAOOO	1015-01-286-0439	19206	12577324	STAFF SECTION,CLEANING..... UOC:AD5,AD7	1
12	PAOZZ	5306-01-297-6802	19206	12576929	.BOLT,EXTERNALLY RELIEVED BODY UOC:AD5,AD7	1
*13	PAOZZ	3040-01-320-2729	19206	12576928	.CONNECTING LINK UOC:AD5,AD7	1
14	PAOZZ	5310-01-319-8987	19206	12576931	.NUT,PLAIN BARREL..... UOC:AD5,AD7	1
15	PAOZZ	5360-01-320-4266	19206	12576933	.SPRING,HELICAL UOC:AD5,AD7	1
16	PAOZZ	5305-01-320-3944	19206	12576934	.SETSCREW UOC:AD5,AD7	1
*17	PAOZZ	5305-01-320-4177	19206	12576932	.SCREW,MACHINE..... UOC:AD5,AD7	2
18	PAOZZ	4710-01-321-9862	19206	12576930	.SLEEVE..... UOC:AD5,AD7	1
*19	PAOZZ	5305-01-320-5788	19206	12576935	.SCREW,MACHINE..... UOC:AD5,AD7	1
20	XAOZZ		19206	12576923	.TUBE UOC:AD5,AD7	1

SECTION II.**TM 9-1015-250-23&P**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
21	PAOZZ	1015-01-285-0142	19206	12576937	.CAP,SPRING..... UOC:AD5,AD7	1
22	PAOZZ	5360-01-300-9527	19206	12576938	.SPRING,HELICAL,COMP UOC:AD5,AD7	1

END OF FIGURE

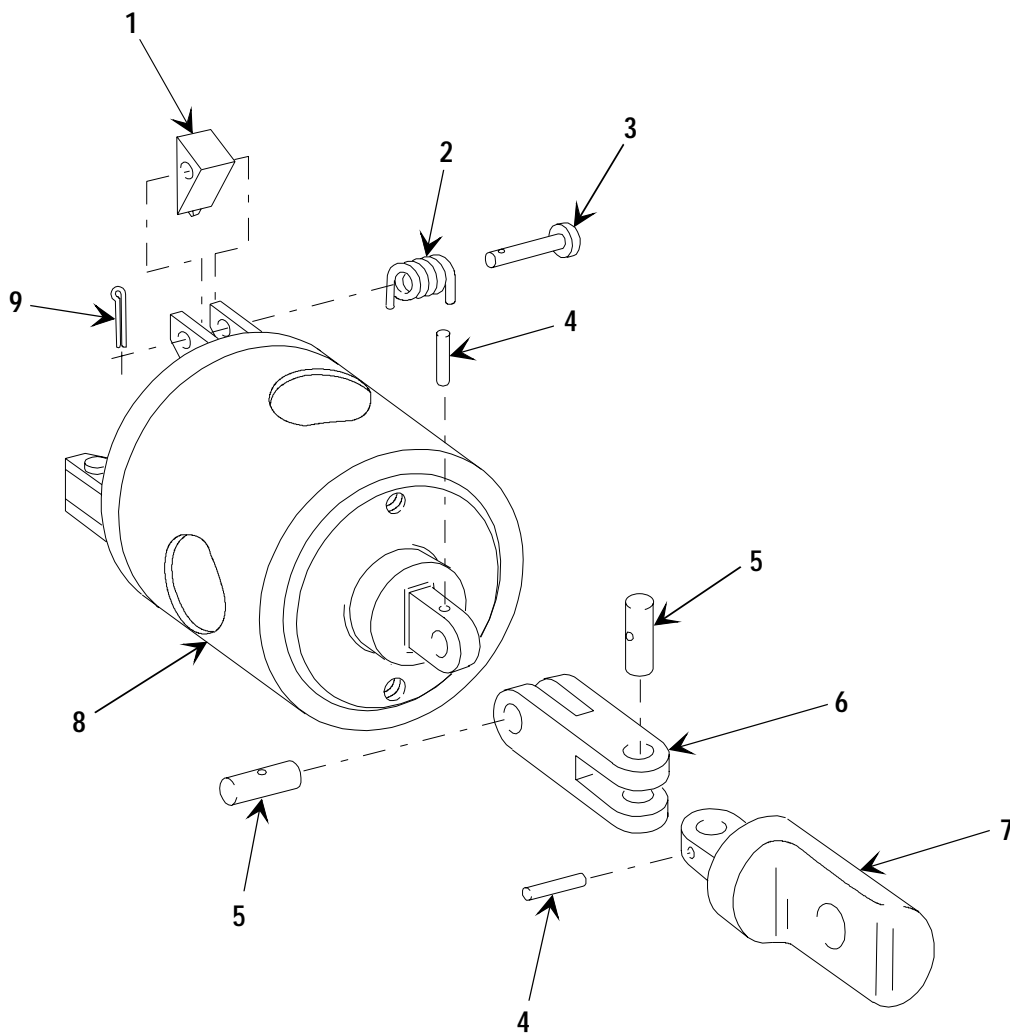


Figure C-28. Cartridge Extractor 12901167.

SECTION II.

TM 9-1015-250-23&P C01

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-28 GROUP 0502 CARTRIDGE EXTRACTOR 12901167	
*1	PAOZZ	1015-01-432-3137	19206	12901166	CATCH,EXTRACTOR..... UOC:AD5,AD7	4
2	PAOZZ	5360-01-289-5281	19206	12576952	SPRING,HELICAL TORSION UOC:AD5,AD7	4
*3	PAOZZ	5315-01-286-0445	S3151	93-1277	PIN,STRAIGHT,HEADED UOC:AD5,AD7	4
4	PAOZZ	5315-01-294-2094	S3151	93-208	PIN,STRAIGHT,HEADLESS UOC:AD5,AD7	2
5	PAOZZ	5315-01-286-0449	S3151	93-1275	PIN,STRAIGHT,HEADLESS UOC:AD5,AD7	2
6	PAOZZ	3040-01-292-8926	19206	12576949	RIGID CONNECTING PLUG UOC:AD5,AD7	1
7	PAOZZ	5340-01-294-2101	19206	12576951	CONNECTOR,ROD END UOC:AD5,AD7	1
8	XAOZZ		19206	12901149	BODY,EXTRACTOR..... UOC:AD5,AD7	1
9	PAOZZ	5315-01-285-0110	S3151	93-162	PIN,COTTER..... UOC:AD5,AD7	4

END OF FIGURE

SECTION II.

TM 9-1015-250-23&P C02

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					FIG. C-28.1 GROUP 94 REPAIR KITS	
	PAFZZ	1015-01-452-9634		5911365	DIRECT SUPPORT PARTS KIT, SEMIANNUAL SERVICE	1
					UOC:AD5,AD7	
					NUT,SELF-LOCKING (1)	12-18
					PACKING, PREFORMED (1)	4-4
					(2)	9-4
					PIN,GROOVED, HEADLESS (1)	9-15
					PIN,SPRING (2)	4-12
					PIN,SPRING (1)	8-14
					PIN,SPRING (1)	7-19
					WASHER,LOCK (2)	9-8
					END OF FIGURE	

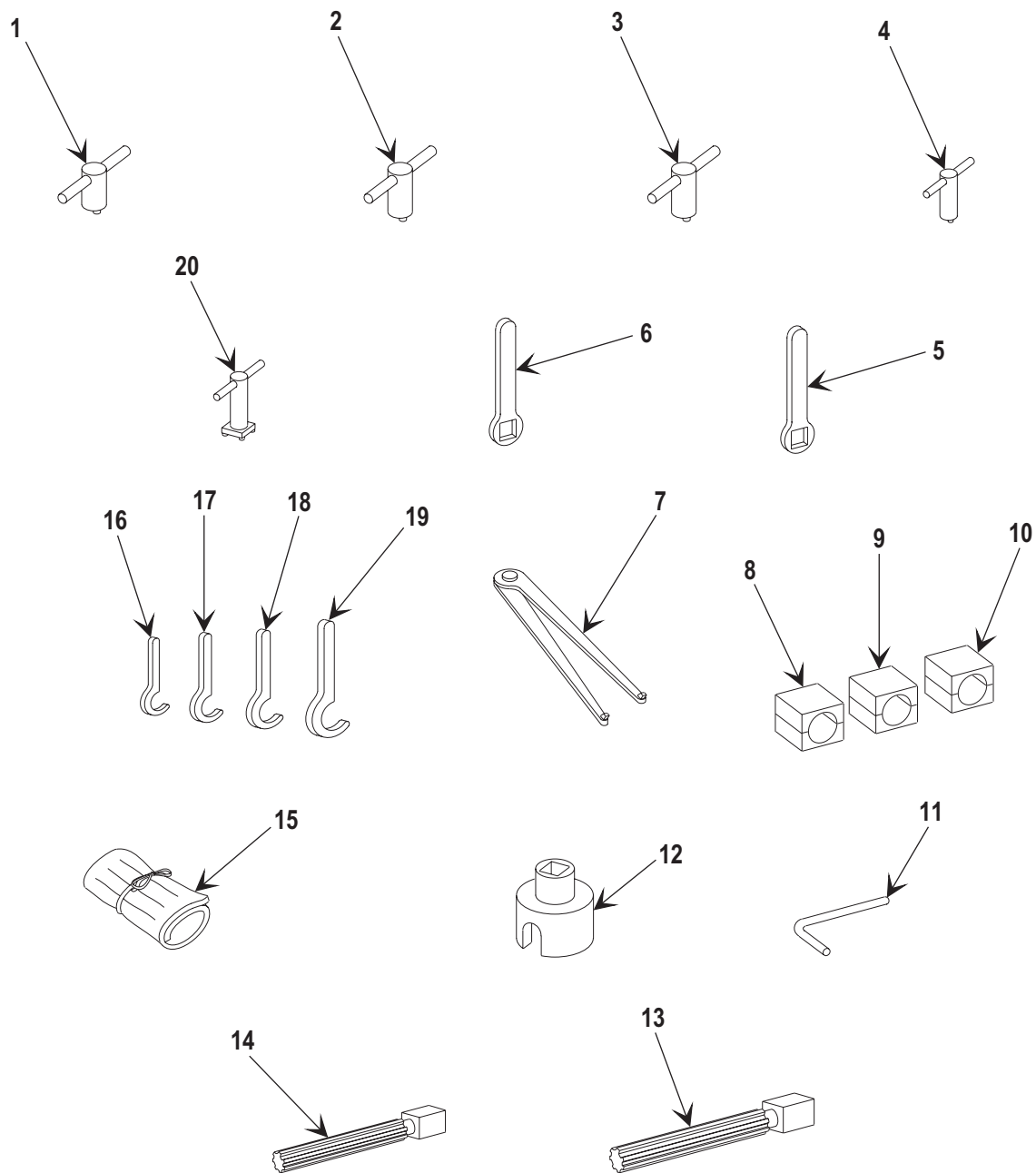


Figure C-29. Special Tools (Sheet 1 of 2).

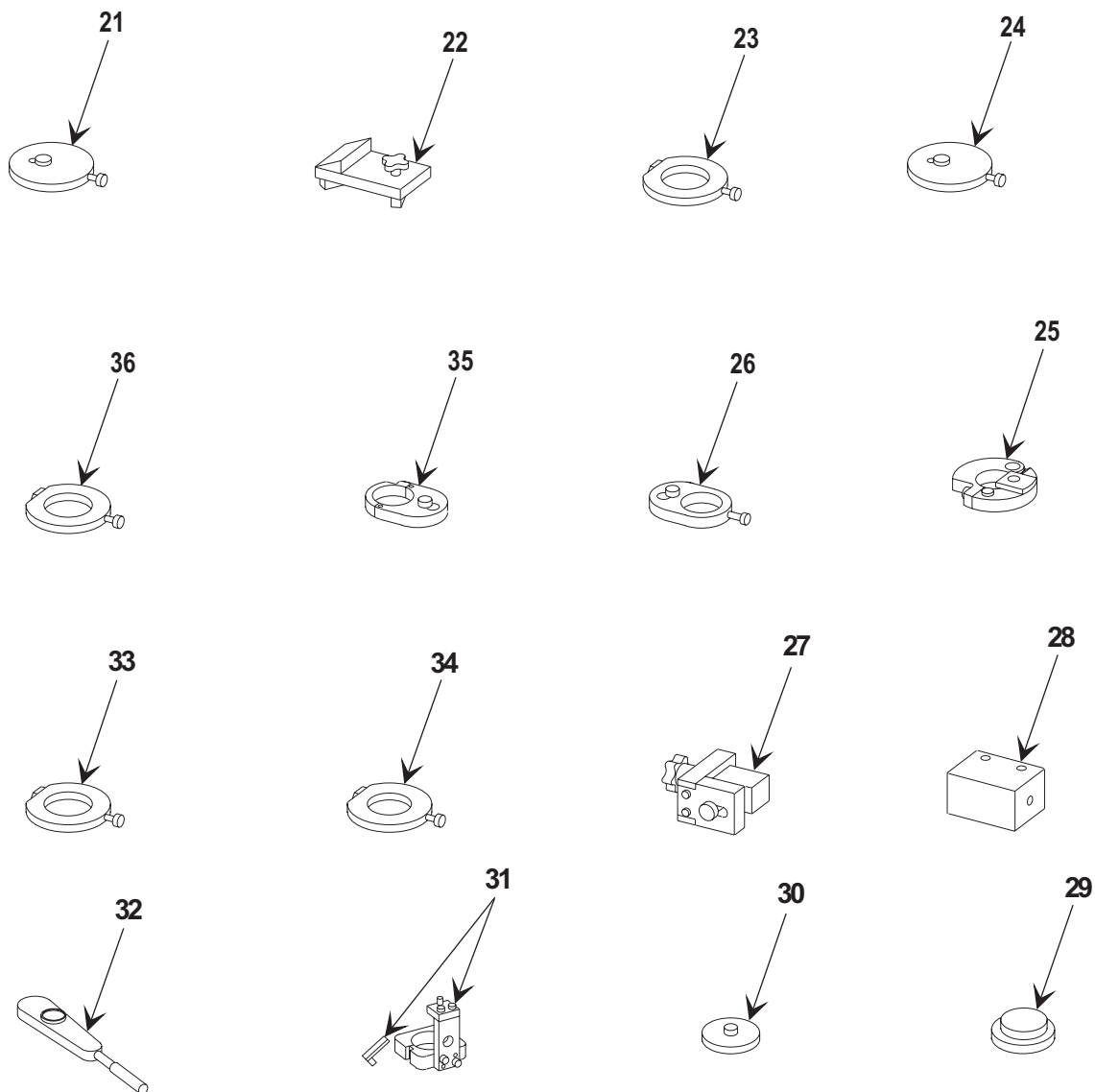


Figure C-29. Special Tools (Sheet 2 of 2).

SECTION III.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
FIG. C-29 GROUP 9500 SPECIAL TOOLS						
1	PAFZZ	5120-01-286-0455	19206	12577337	WRENCH, SPANNER (31MM) UOC:AD5,AD7	1
2	PAFZZ	5120-01-286-0456	19206	12577338	WRENCH, SPANNER (34MM) UOC:AD5,AD7	1
3	PAFZZ	5120-01-286-0460	19206	12577346	WRENCH, SPANNER (40MM) UOC:AD5,AD7	1
4	PAFZZ	5120-01-286-0454	19206	12577336	WRENCH, SPANNER (4MM) UOC:AD5,AD7	1
5	PAFZZ	5120-01-286-0462	19206	12577348	WRENCH, BOX (32MM)..... UOC:AD5,AD7	1
6	PAFZZ	5120-01-286-0457	19206	12577343	WRENCH, BOX (38MM)..... UOC:AD5,AD7	1
7	PAFZZ	5120-01-333-9794	19206	12576998	WRENCH, SPANNER, ADJ #44 UOC:AD5,AD7	1
8	PAFZZ	1015-01-286-0435	19206	12577339	JAW ADAPTER (28MM)..... UOC:AD5,AD7	1
9	PAFZZ	1015-01-286-0436	19206	12577340	JAW ADAPTER (32MM)..... UOC:AD5,AD7	1
10	PAFZZ	1015-01-286-0437	19206	12577341	JAW ADAPTER (40MM)..... UOC:AD5,AD7	1
11	PAFZZ	5120-00-198-5401	81348	GGG-K-275	WRENCH, KEY (1.27MM)..... UOC:AD5,AD7	1
12	PAFZZ	5120-01-286-0472	19206	12577342	ADAPTER, TORQUE WRENCH..... UOC:AD5,AD7	1
13	PAFZZ	5110-01-390-9712	19206	12901131	REAMER, HAND (6MM) UOC:AD5,AD7	1
14	PAFZZ	5110-01-390-7553	19206	12901130	REAMER, HAND (4MM) UOC:AD5,AD7	1
15	PAFZZ	8105-01-326-0075	19206	12577466	TOOL ROLL UOC:AD5,AD7	1
16	PAFZZ	5120-01-333-9796	19206	12577461	WRENCH, HOOK 40/42 UOC:AD5,AD7	1
17	PAFZZ	5120-01-333-9797	19206	12577462	WRENCH, HOOK 45/50 UOC:AD5,AD7	1
18	PAFZZ	5120-01-333-9798	19206	12577463	WRENCH, HOOK 52/55 UOC:AD5,AD7	1
19	PAFZZ	5120-01-333-9799	19206	12577464	WRENCH, HOOK 58/62 UOC:AD5,AD7	1
20	PAFZZ	5120-01-286-0458	19206	12577344	WRENCH, SPANNER (4 POINT) UOC:AD5,AD7	1
21	PAFZZ	5120-01-335-5062	19206	12944228	DRILL GUIDE..... UOC:AD5,AD7	1
22	PAFZZ	5120-01-335-5064	19206	12944229	DRILL GUIDE..... UOC:AD5,AD7	1
23	PAFZZ	5120-01-335-5063	19206	12944230	DRILL GUIDE..... UOC:AD5,AD7	1
24	PAFZZ	5120-01-333-2387	19206	12944231	DRILL GUIDE..... UOC:AD5,AD7	1

SECTION III.

TM 9-1015-250-23&P

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
25	PAFZZ	5120-01-333-2394	19206	12944235	DRILL GUIDE..... UOC:AD5,AD7	1
26	PAFZZ	5120-01-333-2389	19206	12944234	DRILL GUIDE..... UOC:AD5,AD7	1
27	PAFZZ	5120-01-388-8346	19206	12901135	DRILL GUIDE..... UOC:AD5,AD7	1
28	PAFZZ	5210-01-388-3740	19206	12901137	DEPTH BLOCK UOC:AD5,AD7	1
29	PAFZZ	5120-01-332-7643	19206	12944242	WRENCH,RETAINER..... UOC:AD5,AD7	1
30	PAFZZ	5120-01-389-5477	19206	12901134	WRENCH,RETAINER..... UOC:AD5,AD7	1
31	PAFZZ	5120-01-388-1762	19206	12901136	DRILL GUIDE..... UOC:AD5,AD7	1
32	PAFZZ	5120-01-355-1736	19206	12901100	WRENCH,TORQUE..... UOC:AD5,AD7	1
33	PAFZZ	5120-01-333-2391	19206	12944236	DRILL GUIDE..... UOC:AD5,AD7	1
34	PAFZZ	5120-01-333-2388	19206	12944237	DRILL GUIDE..... UOC:AD5,AD7	1
35	PAFZZ	5120-01-333-2392	19206	12944233	DRILL GUIDE..... UOC:AD5,AD7	1
36	PAFZZ	5120-01-333-2390	19206	12944232	DRILL GUIDE..... UOC:AD5,AD7	1

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5315-00-011-9120	15	20	5360-01-285-7361	20	3
	18	10	3110-01-285-7363	20	10
5315-00-012-0123	15	31.1	3110-01-285-7364	20	8
6240-00-019-0877	22	6	5315-01-285-7369	15	24.1
6240-00-044-6914	22	5	5310-01-285-7370	15	36
4730-00-050-4203	4	9	5310-01-285-7371	15	32
	7	12	5310-01-285-7373	12	3
	8	8	5310-01-285-7374	8	1
	13	5	5310-01-285-7375	15	13
	15	39	5310-01-285-7376	20	14
	20	2	5310-01-285-7377	19	4
5120-00-198-5401	29	11	5315-01-285-7378	15	35
5310-00-209-0965	15	18	5315-01-285-7380	19	6
5935-00-572-9180	21	9	5315-01-285-7381	20	4
5310-00-582-5965	9	8	5315-01-285-7382	15	21
6220-00-669-5623	21	10		18	9
5340-00-705-7333	21	7	5315-01-285-7383	18	12
5935-00-773-1428	21	3	5315-01-285-7386	19	1
5310-00-809-4061	15	26	5330-01-285-7387	20	11
5310-00-833-8567	21	8	5330-01-285-7388	16	2
5305-00-866-0444	9	9	5330-01-285-7389	20	15
5310-00-897-6145	24	1	5330-01-285-7390	20	16
4030-00-948-7315	12	5	5306-01-285-7392	15	44
	16	5	5305-01-285-7394	22	1
4010-00-988-3181	23	2	5305-01-285-7395	21	4
4010-01-005-4775	12	6	5305-01-285-7396	21	2
4010-01-014-1828	16	3	5305-01-285-7399	20	13
5320-01-024-7307	15	40	5310-01-285-7402	12	17
5305-01-024-7309	15	6	5310-01-285-7403	12	13
4030-01-114-3894	12	7	5310-01-285-7404	20	7
	16	4	5310-01-285-7405	22	2
5310-01-155-2503	15	17	5340-01-285-7406	20	5
2610-01-203-9358	17	1	5310-01-285-7407	15	33
4010-01-209-4741	23	3	5310-01-285-7409	15	12
4010-01-241-0967	23	1	5305-01-285-7411	18	2
4030-01-242-1985	23	4	5305-01-285-7414	15	28
5330-01-252-9204	22	7	5305-01-285-7415	15	8
6220-01-252-9283	22	8	1015-01-285-7417	1	1
5310-01-264-9404	12	18	1015-01-286-0435	29	8
5315-01-285-0110	28	9	1015-01-286-0436	29	9
5310-01-285-0124	15	9	1015-01-286-0437	29	10
	18	6	1015-01-286-0439	27	11
	19	7	1015-01-286-0440	27	1
5310-01-285-0125	15	5	5340-01-286-0441	27	6
	21	1	5310-01-286-0444	9	13
5305-01-285-0132	15	27	5315-01-286-0445	28	3
1015-01-285-0140	13	2	5315-01-286-0449	28	5
1015-01-285-0141	12	4	5120-01-286-0454	29	4
1015-01-285-0142	27	2	5120-01-286-0455	29	1
	27	9	5120-01-286-0456	29	2
	27	21	5120-01-286-0457	29	6
1015-01-285-7358	20	12	5120-01-286-0458	29	20
1015-01-285-7359	20	1	5120-01-286-0460	29	3

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5120-01-286-0462	29	5	5306-01-297-6802	27	12
5330-01-286-0463	4	4	5310-01-298-8470	11	3
	9	4	5330-01-298-8472	22	9
5305-01-286-0465	25	10	5620-01-298-8485	18	4
5305-01-286-0466	7	25	1015-01-298-8501	6	1
5305-01-286-0467	7	30	6150-01-298-8511	21	11
5120-01-286-0472	29	12	4710-01-298-8540	27	4
5310-01-286-0474	8	10	5306-01-299-5923	4	14
5310-01-286-0475	4	11	5315-01-299-5993	14	3
5305-01-286-0479	12	12	5340-01-299-6157	15	25
5310-01-286-2111	19	3	5340-01-299-6178	14	5
2530-01-286-2119	20	9	1015-01-299-8806	6	2
5365-01-286-6308	9	11	3020-01-299-8835	7	6
5360-01-288-1735	24	2	3010-01-299-8855	11	5
5310-01-288-9874	20	6	3020-01-299-9596	7	29
5310-01-289-5273	11	2	3120-01-300-0897	9	5
5360-01-289-5281	28	2	5340-01-300-0914	18	5
5315-01-291-4573	4	12	3120-01-300-6417	12	10
	7	19	5360-01-300-6490	14	4
	14	7	5340-01-300-8663	15	4
5975-01-292-0952	15	2	3120-01-300-9512	7	22
5365-01-292-0955	9	7	5360-01-300-9527	27	3
1015-01-292-0966	26	2		27	10
1015-01-292-5242	6	3		27	22
1015-01-292-5243	4	1	5305-01-301-3212	8	9
5310-01-292-7757	4	13	1015-01-301-3213	4	2
5310-01-292-7758	8	6	1015-01-301-3214	10	1
5310-01-292-7759	7	27	5340-01-301-8241	10	3
5340-01-292-7765	15	1	5365-01-301-8242	8	12
1015-01-292-7771	5	1	5305-01-302-0072	7	23
5360-01-292-7778	9	10	5310-01-302-0073	12	11
3040-01-292-8926	28	6	3040-01-302-2648	8	13
5340-01-292-8927	15	3	5355-01-302-4082	14	6
1015-01-292-9239	4	6	5365-01-302-4156	7	21
1015-01-293-8859	5	2	5305-01-303-1319	12	2
5315-01-294-2094	18	11	3040-01-303-1339	7	14
	25	4	3040-01-303-1340	7	28
	28	4	3040-01-303-1341	7	1
5340-01-294-2101	28	7	5305-01-303-5199	7	13
5340-01-294-7458	7	16	5305-01-303-9275	8	15
5340-01-294-9901	15	23	5306-01-303-9811	24	4
1015-01-295-0786	15	31	1015-01-304-0898	7	3
5340-01-295-1827	7	16	1015-01-304-0899	7	24
5310-01-295-2514	7	17	5365-01-304-5516	12	19
5310-01-295-2515	7	20	5365-01-304-5517	4	16
5310-01-295-2516	7	5	5365-01-304-5518	7	7
5340-01-295-5384	7	26	5365-01-304-5519	13	4
5325-01-295-8129	21	5	5305-01-304-6520	14	2
5310-01-296-6071	7	8	5310-01-304-6531	12	20
	8	5	5310-01-304-6532	12	9
3120-01-297-0612	15	37	5306-01-304-6579	15	38
3040-01-297-6580	9	12	1015-01-304-6580	9	2

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5340-01-304-6584	9	1	5120-01-335-5062	29	21
5340-01-304-6585	11	1	5120-01-335-5063	29	23
5340-01-304-6597	12	16	5120-01-335-5064	29	22
5305-01-304-6616	7	11	1015-01-354-2152	1	4
5340-01-304-6646	18	3	5315-01-354-3825	25	1
1015-01-304-9001	8	11	5340-01-354-4633	25	6
1015-01-304-9002	19	5	5120-01-355-1736	29	32
5310-01-304-9810	12	15	9390-01-366-6127	24	3
1015-01-305-3133	15	22	1240-01-366-7322	1	6
1015-01-305-3139	15	15	5315-01-385-6101	10	4
5365-01-305-3144	8	7	5315-01-385-6112	11	8
5340-01-306-0667	19	8	5315-01-386-3481	10	2
5340-01-306-0724	18	1	5315-01-386-3492	10	6
5310-01-306-1167	11	6	5315-01-386-3550	25	3
2330-01-307-0145	15	43	5306-01-386-3949	10	7
6150-01-310-9376	21	6	5315-01-386-3977	6	5
1015-01-312-6330	6	4	5310-01-386-6034	25	5
5310-01-313-2367	15	30	1015-01-387-0583	4	3
2530-01-316-9247	20	12	1015-01-387-0589	12	1
9905-01-317-5795	15	41	5355-01-387-4371	7	18
5310-01-319-8987	27	14	5315-01-387-8909	18	8
3040-01-320-2729	27	13	5340-01-387-8910	7	10
5305-01-320-3944	27	16	5120-01-388-1762	29	31
5305-01-320-4177	27	17	5315-01-388-2294	4	15
5360-01-320-4266	27	15	5210-01-388-3740	29	28
5305-01-320-5788	27	19	5340-01-388-3742	8	3
1015-01-320-6538	15	42	5315-01-388-4147	8	14
1015-01-321-4235	15	34	1015-01-388-5570	25	9
4710-01-321-9862	27	18	5120-01-388-8346	29	27
5330-01-325-9971	7	2	4010-01-388-8355	5	3
8105-01-326-0075	29	15		6	6
5340-01-326-5138	15	24	5120-01-389-5477	29	30
5314-01-330-5499	19	2	1015-01-390-6331	15	11
4030-01-332-4568	5	7	5110-01-390-7553	29	14
	6	10	5110-01-390-9712	29	13
5120-01-332-7643	29	29	4010-01-391-3407	5	4
2540-01-332-7654	15	16		6	7
2540-01-333-0728	15	10	9320-01-412-7773	15	45
2610-01-333-1897	17	2		18	7
5120-01-333-2387	29	24	1015-01-418-2237	7	15
5120-01-333-2388	29	34	4010-01-421-4830	15	14
5120-01-333-2389	29	26	4730-01-429-8354	4	10
5120-01-333-2390	29	36	1015-01-432-3137	28	1
5120-01-333-2391	29	33	1015-01-433-4471	26	1
5120-01-333-2392	29	35	1015-01-448-1841	25	8
5120-01-333-2394	29	25	1015-01-452-9634	28.1	1
2530-01-333-2395	17	3	5340-01-465-4554	7	18
5120-01-333-9794	29	7	5340-01-466-4058	15	19
5120-01-333-9796	29	16	4010-01-476-6486	5	6
5120-01-333-9797	29	17		6	9
5120-01-333-9798	29	18	5360-01-476-6489	5	5
5120-01-333-9799	29	19		6	8

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STOCK NUMBER	FIG.	ITEM
5315-01-482-1800	13	3
5306-01-513-3322	9	6
5315-01-518-4181	7	18.1
1015-01-521-1616	1	7
1015-01-521-1617	1	2
5305-01-521-3873	12	8
5305-01-521-4859	9	3
1015-01-522-0775	3	4
1015-01-522-2630	1	3
5305-01-523-3246	8	2
5310-12-131-5642	25	2
5310-12-156-4799	11	4
5310-12-159-0167	25	7
5310-12-301-1728	7	9
	8	4
5310-12-311-3530	12	14
5305-12-313-0952	7	4
	11	7

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PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
D63464/1-06026	11	8	MS51844-23	12	7
D63464/2-06070	13	3		16	4
D63464/7-06050	4	15	MS87006-33	12	5
D63477/1-133C	10	4		16	5
D63477/8-135P	8	14	MS90725-58	22	1
DIN1440-10-ST-A2A	25	2	NAS-3104-C4-12	24	4
DIN148102X18	25	4	RR-C-271	23	2
DIN1481-3X16-B2D	7	19	10503407	15	28
	14	7	11505057	15	17
DIN1481-3X18-B2D	4	12	12576881	1	1
DIN2093-A28	11	4	12576922	26	2
DIN2093-B25-B3D	25	7	12576923	27	20
DIN2093-B31,5-A3	7	9	12576924	27	5
	8	4	12576925	27	7
DIN2093-B40-A3P	12	14	12576928	27	13
DIN7337-3.2X6B2D	15	40	12576929	27	12
DIN914M14X1.5X	20	13	12576930	27	18
DIN915-AM-5X8-B2D	25	10	12576931	27	14
DIN915-M5X8-45H	7	4	12576932	27	17
	11	7	12576933	27	15
DIN 935-M10X1.5-B2D	15	24.1	12576934	27	16
DIN94-3.2X18-ST-B5A	25	3	12576935	27	19
DIN985-M8-A4C	12	18	12576937	27	2
DOD-P-63464/1A-0	7	18.1		27	9
GGG-K-275	29	11		27	21
ISO4026-M2.5X4-1	12	8	12576938	27	3
ISO4027-M3X4-45H	8	2		27	10
ISO4028-10.9-M6X	9	3		27	22
MIL-W-83420	16	3	12576939	27	4
MIL-W-83420/3-001	12	6	12576941	27	8
MS15001-1	4	9	12576949	28	6
	7	12	12576951	28	7
	8	8	12576952	28	2
	13	5	12576976	12	4
	15	39	12576998	29	7
	20	2	12576999	1	2
MS15570-1251	22	6	12577000	4	8
MS21083-C4	24	1	12577001	5	2
MS24585-C227	24	2	12577012	5	1
MS24665-287	15	20	12577015	5	6
	18	10		6	9
MS24665-355	15	31.1	12577017	5	7
MS27183-15	15	26		6	10
MS35266-76	9	9	12577018	5	5
MS35338-42	22	2		6	8
MS35338-44	9	8	12577019	4	1
MS35338-47	15	18	12577020	12	15
MS35478-1683	22	5	12577021	12	16
MS51329-1	21	10	12577027	13	2
MS51329-23	22	8	12577030	13	4
MS51329-3	22	3	12577031	12	9
MS51329-4	22	7	12577032	12	10
MS51329-5	22	4	12577033	12	19

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PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
12577034	12	20	12577119	9	1
12577035	12	12	12577120	11	6
12577036	12	11	12577122	11	2
12577038	12	2	12577123	11	5
12577039	4	6	12577125	11	3
12577041	8	15	12577126	11	1
12577042	4	13	12577131	10	3
12577046	8	6	12577134	10	1
12577047	8	11	12577139	9	10
12577048	8	12	12577140	9	5
12577050	4	10	12577141	1	5
12577051	8	10	12577142	15	23
12577052	8	7	12577146	15	37
12577053	8	13	12577177	17	3
12577055	4	11	12577178	15	30
12577056	7	8	12577179	15	24
	8	5	12577182	15	43
12577057	8	9	12577241	15	22
12577058	8	16	12577243	18	3
12577060	4	14	12577246	18	1
12577061	4	5	12577247	19	5
12577066	7	13	12577249	19	8
12577067	7	3	12577252	19	2
12577068	7	24	12577262	18	5
12577071	7	26	12577264	18	4
12577073	7	7	12577270	15	15
12577075	7	21	12577272	16	1
12577076	7	23	12577277	15	10
12577077	7	14	12577284	15	4
12577079	7	20	12577287	15	16
12577080	7	22	12577288	15	31
12577081	7	1	12577293	15	25
12577083	7	27	12577294	15	1
12577084	7	28	12577295	15	2
12577086	7	29	12577296	15	3
12577087	7	11	12577299-1	2	1
12577088	7	16	12577304	15	7
12577094	7	17	12577305	21	6
12577095	7	15	12577307	21	11
12577099	7	6	12577315	22	9
12577100	7	5	12577318	16	2
12577102	14	1	12577319	4	4
12577104	14	6		9	4
12577108	14	5	12577321	20	11
12577109	14	3	12577322	20	16
12577110	14	2	12577324	27	11
12577111	14	4	12577325	27	1
12577112	4	16	12577326	27	6
12577113	4	2	12577328	20	3
12577114	9	12	12577335	20	5
12577115	9	11	12577336	29	4
12577117	9	7	12577337	29	1
12577118	9	2	12577338	29	2

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PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
12577339	29	8	12901120	5	3
12577340	29	9		6	6
12577341	29	10	12901122	13	1
12577342	29	12	12901123	12	1
12577343	29	6	12901124	4	3
12577344	29	20	12901129	15	11
12577346	29	3	12901130	29	14
12577348	29	5	12901131	29	13
12577358	15	41	12901132	10	5
12577359	15	42	12901134	29	30
12577360	20	9	12901135	29	27
12577365	20	1	12901136	29	31
12577367	20	12	12901137	29	28
12577368	20	12	12901149	28	8
12577369	15	38	12901154	15	29
12577373	20	15	12901155	17	1
12577430	7	2	12901156	17	2
12577431	21	5	12901162	25	8
12577461	29	16	12901163	15	14
12577462	29	17	12901164	9	6
12577463	29	18	12901166	28	1
12577464	29	19	12901167	26	1
12577466	29	15	12901168	15	19
12577490	20	8	12901169	7	18
12577491	20	10	12901190	2	2
12900891	4	7	12901191	3	3
12900893	6	2	12901192	3	4
12900898	6	1	12901195	1	3
12900901	4	5	12944228	29	21
12900902	7	16	12944229	29	22
12900904	6	3	12944230	29	23
12900905	6	4	12944231	29	24
12901000	1	7	12944232	29	36
12901012	1	4	12944233	29	35
12901014	25	6	12944234	29	26
12901019	25	1	12944235	29	25
12901040	15	34	12944236	29	33
12901071	24	3	12944237	29	34
12901075	24	5	12944242	29	29
12901098	10	7	144010A2D	25	2
12901100	29	32	5911365	28.1	1
12901101	25	9	7057333	21	7
12901102	15	45	7731428	21	3
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	28	4
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	21	1
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93-399	12	3
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APPENDIX D

EXPENDABLE AND DURABLE ITEMS LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists expendable and durable items you will need to maintain the M120/M121 mortar. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

a. Column (1) - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use adhesive (item 1, app D)").

b. Column (2)- Level. This column identifies the lowest level of maintenance that requires the listed item.

- C - Operator/Crew
- O - Unit Maintenance
- F - Direct Support Maintenance
- H - General Support Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Contractor and Government Entity Code (CAGEC) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M)/Unit of Issue (U/I). This measure is expressed by a two-character alphabetical abbreviation (e.g., EA, LN., PR). If the unit of measure differs from the unit of issue as shown in the Army Master Data File (AMDF), requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
1	O	8040-00-290-4301	ADHESIVE (81348) MMM-A-1617TY2	QT
2	O	6810-00-201-0906	ALCOHOL, DENATURED 1-pt (473.18-ml) (81348) OE760	PT
3	O	8135-00-292-9719	BARRIER MATERIAL: grease- proofed, waterproofed, flexible 36 in. x 100 yd roll (81348) MIL-B-121	RO
4	O	8020-00-242-7266	BRUSH, PAINT (96906) MS16866	EA
5	O	7920-00-205-2401	BRUSH, CLEANING, TOOL AND PARTS (81349) MIL-B-43871	EA
6	O	6850-00-227-1887	CLEANING COMPOUND, OPTICAL LENS: Liquid (81349) MIL-C-43454	OZ
7	C	6850-00-224-6657	CLEANING COMPOUND, RIFLE BORE (81349) MIL-C-372	OZ
8	O	5305-00-221-0872	CLOTH, ABRASIVE: Crocus designed for general purpose use 50 sheet package (58536) A-A-1206	SH
9	O	8135-00-989-9889	CUSHIONING MATERIAL: cellulose 20 in. x 50 ft roll (81348) PPP-C-843	RO
10	O	8415-00-266-8675	GLOVES, CHEMICAL AND SOL- VENT RESISTANT (81348) ZZ-G-381	PR
11	O	9150-00-145-0268	GREASE, AIRCRAFT (GA) -80° to +450°F (-27° to +238°C) effective (81349) MIL-G-81322	LB

Section II. EXPENDABLE AND DURABLE ITEMS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
12	O	9150-00-271-8427	LUBRICATING OIL, PRESERVATIVE, GENERAL PURPOSE (GPL) (81349) MIL-L-3150	QT
13	O	9150-00-292-9687	LUBRICATING OIL, WEAPONS (LAW) 1-qt (0.946-l) can (81349) MIL-L-14107	QT
14	O	6640-00-663-0832	PAPER, LENS: tissue sheet form (81348) NNN-P-40	EA
15	O	8010-01-229-7540	POLYURETHANE COATING (BLACK) (81349) MIL-C-53039	QT
16	O	8010-01-229-7546	POLYURETHANE COATING (GREEN) (81349) MIL-C-53039	QT
17	O	8010-01-193-0516	PRIMER, COATING (81349) MIL-P-53022	KT
18	O	7920-00-205-1711	RAG, WIPING, cotton, unbleached, mixture of white or colored, designed for general purpose use, 50-lb (22.68/kg) bale (58536) A-A-2522	EA
19	O	1010-01-343-3883	SLEEVE, BORE CLEANING Box of 210 (19200) 12901064-1	BX
20	O	6850-00-281-1985	SOLVENT, DRY CLEANING 1-gal. (3.8-l) can (58536) A-A-711	GL
21	O	7510-00-266-6712	TAPE, PRESSURE SENSITIVE ADHESIVE, Type 4, CL1 2 in. x 60 yd roll (81348) PPP-T-60	RO

Section II. EXPENDABLE AND DURABLE ITEMS LIST (Cont)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) (U/M)/ (U/I)
22	O	7510-00-297-6655	TAPE, PRESSURE SENSITIVE ADHESIVE paperback, water resistant (81349) PPP-T-76	RO
23	O	8010-00-181-8080	THINNER, PAINT PRODUCT (81348) MIL-T-81772	GL
24			DELETED	
25	O	8030-01-054-3968	THREAD LOCKING COMPOUND (81349) 12900145	BT

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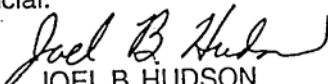
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By Order of the Secretary of the Army

DENNIS J REIMER
General, United States Army
Chief of Staff

Official:


JOEL B. HUDSON
*Administrative Assistant to the
Secretary of the Army*

02315

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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>			
	2-3	2-8			2-2	Should include PMCS criteria for mortar installed in carrier.			
									
<i>*Reference to line numbers within the paragraph or subparagraph.</i>									
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TYPED NAME, GRADE OR TITLE				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION			SIGNATURE	

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meter = 0.3937 Inch
1 Decimeter = 10 Centimeters = 3.94 Inches
1 Meter = 10 Decimeters = 100 Centimeters
= 1000 Millimeters = 39.37 Inches
1 Dekameter = 10 Meters = 32.8 Feet
1 Hectometer = 10 Dekameters = 328.08 Feet
1 Kilometer = 10 Hectometers = 1000 Meters
= 0.621 Mile = 3,280.8 Feet
Millimeters = Inches times 25.4
Inches = Millimeters divided by 25.4

WEIGHTS

1 Centigram = 10 Milligrams = 0.154 Grain
1 Decigram = 10 Centigrams = 1.543 Grains
1 Gram = 0.001 Kilogram = 10 Decigrams
= 1000 Milligrams = 0.035 Ounce
1 Dekagram = 10 Grams = 0.353 Ounce
1 Hectogram = 10 Dekagrams = 3.527 Ounces
1 Kilogram = 10 Hectograms = 1000 Grams = 2.205 Pounds
1 Quintal = 100 Kilograms = 220.46 Pounds
1 Metric Ton = 10 Quintals = 1000 Kilograms = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liter = 0.034 Fluid Ounce
1 Centiliter = 10 Milliliters = 0.34 Fluid Ounce
1 Deciliter = 10 Centiliters = 3.38 Fluid Ounces
1 Liter = 10 Deciliters = 1000 Milliliters = 33.82 Fluid Ounces
1 Dekaliter = 10 Liters = 2.64 Gallons
1 Hectoliter = 10 Dekaliters = 26.42 Gallons
1 Kiloliter = 10 Hectoliters = 264.18 Gallons

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inch
1 Sq Decimeter = 100 Sq Centimeters = 15.5 Sq Inches
1 Sq Meter (Centare) = 10 Sq Decimeters
= 10,000 Sq Centimeters = 10.764 Sq Feet
1 Sq Dekameter (Are) = 100 Sq Meters = 1,076.4 Sq Feet
1 Sq Hectometer (Hectare) = 100 Sq Dekameters
= 2.471 Acres
1 Sq Kilometer = 100 Sq Hectometers = 1,000,000 Sq Meters
= 0.386 Sq Mile

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.061 Cu Inches
1 Cu Decimeter = 1000 Cu Centimeters = 61.02 Cu Inches
1 Cu Meter = 1000 Cu Decimeters = 1,000,000 Cu Centimeters
= 35.31 Cu Feet

TEMPERATURE

$5/9 (°F - 32°) = °C$
 $(9/5 \times °C) + 32° = °F$
-35° Fahrenheit is equivalent to -37° Celsius
0° Fahrenheit is equivalent to -18° Celsius
32° Fahrenheit is equivalent to 0° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
100° Fahrenheit is equivalent to 38° Celsius
212° Fahrenheit is equivalent to 100° Celsius

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>	<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches.....	Centimeters.....	2.540	Centimeters.....	Inches.....	0.394
Feet.....	Meters.....	0.305	Meters.....	Feet.....	3.280
Yards.....	Meters.....	0.914	Meters.....	Yards.....	1.094
Miles.....	Kilometers.....	1.609	Kilometers.....	Miles.....	0.621
Square Inches.....	Square Centimeters.....	6.451	Square Centimeters.....	Square Inches.....	0.155
Square Feet.....	Square Meters.....	0.093	Square Meters.....	Square Feet.....	10.764
Square Yards.....	Square Meters.....	0.836	Square Meters.....	Square Yards.....	1.196
Square Miles.....	Square Kilometers.....	2.590	Square Kilometers.....	Square Miles.....	0.386
Acres.....	Square Hectometers.....	0.405	Square Hectometers.....	Acres.....	2.471
Cubic Feet.....	Cubic Meters.....	0.028	Cubic Meters.....	Cubic Feet.....	35.315
Cubic Yards.....	Cubic Meters.....	0.765	Cubic Meters.....	Cubic Yards.....	1.308
Fluid Ounces.....	Milliliters.....	29.573	Milliliters.....	Fluid Ounces.....	0.034
Pints.....	Liters.....	0.473	Liters.....	Pints.....	2.113
Quarts.....	Liters.....	0.946	Liters.....	Quarts.....	1.057
Gallons.....	Liters.....	3.785	Liters.....	Gallons.....	0.264
Ounces.....	Grams.....	28.349	Grams.....	Ounces.....	0.035
Pounds.....	Kilograms.....	0.454	Kilograms.....	Pounds.....	2.205
Short Tons.....	Metric Tons.....	0.907	Metric Tons.....	Short Tons.....	1.102
Pound-Feet.....	Newton-Meters.....	1.356	Newton-Meters.....	Pound-Feet.....	0.738
Pound Inches.....	Newton-Meters.....	0.11375	Kilopascals.....	Pounds per Square Inch.....	0.145
Pounds per Square Inch.....	Kilopascals.....	6.895	Kilometers per Liter.....	Miles per Gallon.....	2.354
Ounce-Inches.....	Newton-Meters.....	0.007062	Kilometers per Hour.....	Miles per Hour.....	0.621
Miles per Gallon.....	Kilometers per Liter.....	0.425	°Fahrenheit.....	°Celsius.....	$°C = (°F - 32) \times 5/9$
Miles per Hour.....	Kilometers per Hour.....	1.609	°Celsius.....	°Fahrenheit.....	$°F = (9/5 \times °C) + 32$

